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COMMISSION

CALIFORNIA ENERGY DEMAND 2006-2016
STAFF ENERGY DEMAND FORECAST
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CHAPTER 1
INTRODUCTION AND STATEWIDE FORECAST

Introduction

This California Energy Commission (Energy Commission) staff report forecasts electricity and end user natural gas consumption and peak electricity demand for the State of California and for each major utility planning area within the State for 2006-2016. The planning area forecasts are also disaggregated to the level of individual load serving entities (LSEs) providing energy services to end users, including forecasts of bundled customers of the three investor-owned utilities (IOUs)..

The *California Energy Demand 2006-2016* (CED 2006) forecast supports the analysis and recommendations of the 2005 *Integrated Energy Policy Report (Energy Report)*, including electricity and natural gas system assessment and analysis of progress toward energy efficiency, demand response, and renewable energy goals. The *Energy Report* Committee held a workshop on June 30, 2005, to receive public comments on the June 2005 draft staff forecast and related reports[1]. Hearing participants identified possible weaknesses in the staff forecast and discussed several key uncertainties driving the differences between staff and utility forecasts, including trends in commercial and industrial energy use, residential demographic trends, and currency of data. In response, the Committee directed staff to make certain improvements to the forecast and vary certain key assumptions to develop a reasonable range of possible outcomes. This report presents a revised baseline forecast and high and low ranges, prepared at the Committee's direction. These forecasts will be presented at the Committee hearing on October 7th, 2005. Following the hearing, the final forecasts may be adopted by the California (Energy Commission).

The final forecasts will be used in a number of applications. The Energy Commission will transmit the final forecast or range of forecasts to the California Public Utilities Commission (CPUC) for use in its 2006 procurement process. The CPUC has identified the Energy Report process as the appropriate venue for considering issues of load forecasting, resource assessment, and scenario analyses in determining the appropriate levels and ranges of resource needs for load serving entities (LSEs) in California[2]. The final forecasts will also be used in the Energy Commission's electricity supply-demand assessment for the summer of 2006 and may also serve as a reference case in the CPUC's resource adequacy process for 2006. The forecasts will also be an input to the California Independent System Operator (CA ISO) controlled grid study, and other transmission planning studies. The *California Gas Report* also uses Energy Commission demand and supply assessments.

Overview of the Revised Forecasts

This section summarizes construction of the forecast cases. The chapters for each utility planning area present the forecast range results in more detail.

The June 2005 forecast used 2003 consumption as the last historical year. This resulted in starting point differences between the staff and utility forecasts using more recent data. To address these concerns, all the forecasts presented here incorporate 2004 electricity and natural gas consumption, peak, and weather data. Some utilities pointed out that some of the historical data used by staff was inconsistent with their own data. In these cases staff replaced historical consumption and peak data with the values reported on the demand forms submitted to the Energy Commission by each LSE.

In the residential sector, the utility forecasts generally assumed more growth in income and households than the staff forecast. Southern California Edison (SCE) and San Diego Gas and Electric (SDG&E) use projections developed by Global Insight, which projects more growth in personal income. They also project lower population growth but declining persons per household. The Committee directed staff to create a high case assuming higher incomes and more households.

The base case forecast uses a new, higher forecast of per capita income produced by Economy.com in June 2005, with updated population estimates. Since the June 2005 forecast the California Department of Finance (CDF) re-estimated interim population and persons-per-household size by county for January 2001—2005. These revised estimates were factored into the new base case population and persons-per-household forecasts. The residential high case incorporates assumptions similar to that of the IOU forecasts, using the new, higher real personal income and assuming constant persons per household through the forecast period, resulting in more households. The low forecast uses the new persons-per-household forecast with the old per capita income projection.

Participants also commented that the industrial forecast seemed unreasonably high given marketplace conditions in California. Staff reviewed the historical use per output for each industry group. For the CED 2006 forecasts, staff has switched to industrial value added as an economic driver. The data provided by Economy.com allows evaluation of historical energy use and production relationships for each North America Industrial Classification System (NAICS) group, at a regional level. Staff evaluated the trends in energy use per output for each NAICS group and revised the energy intensity growth rates to produce a forecast more consistent with historical trends. For manufacturing industries, this entails a faster decline in use per dollar of value of shipments over the forecast period. This higher forecast is used for the low and base case forecast, while the original staff forecast, calibrated to 2004 data, is used in the high case.The oil and gas extraction industry, however, has become more electricity intensive in recent years. In the revised mining sector forecast, used for all cases, this trend is projected to continue.

Staff's June 2005 forecast projected a decline in commercial electricity use per square foot, reflecting the effects of building and appliance standards and slowing growth in office equipment demand. Some participants thought this reversal of recent trends unlikely and expected use per square foot to continue to increase. The Committee directed staff to develop a high case with increasing-to-flat use per square foot. To accomplish this, impacts of the new 2005 nonresidential lighting standards were removed from the model, and growth of demand in the miscellaneous and office equipment end uses was accelerated by 1 to 2 percent per year. For the low case, growth of office and miscellaneous equipment was set at zero, and some lighting standards effects not included in the base case were added back in.

Differences in the peak forecasts primarily reflect changes in the consumption data, with one exception. SDG&E pointed out that the portion of San Diego residential load identified as weather sensitive seemed inappropriately low compared with their own analyses. In response, staff incorporated a more accurate load profile for San Diego'sresidential demand. Staff also revised the load factor used for 2004 to better account for below-normal temperatures in that year. These new assumptions were used in all three forecast cases.

The table below summarizes key differences between the forecasts for the major sectors. For other sectors (agriculture, water pumping, transportation, communication, and utilities) the only change from the June 2005 forecast is the incorporation of 2004 consumption data. The same revised forecast is used for all three cases.

Table 1-1: Composition of Revised Forecasts

	Industrial	Mining	Commercial	Residential
Base	Decreased kwh per output	Increased kwh per output	No 2005 lighting standards, no 98 office lighting standards; no misc./office equipment growth	New income, New persons per household
Low	Decreased kwh per output	Increased kwh per output	No 2005 lighting standards; no misc./office equipment growth	June income, New persons per household
High	Jun-05 Forecast	Increased kwh per output	No lighting standards effects; higher misc. (2%). and office equipment growth (1%)	New income, Constant persons per household

Another issue was the treatment of energy efficiency savings from IOU programs planned after 2008. SCE and SDG&E included these impacts in their electricity

demand forecasts presented at the Energy Commission's workshop. When those impacts are excluded from the SCE and SDG&E forecasts, both forecasts are significantly higher than staff's in the post-2008 period. The forecasts presented here do not include those impacts because they are dependent upon future CPUC decisions. The CPUC will review and possibly modify the energy efficiency targets before approving funding for post-2008 programs.

Demand Forecast Disaggregation

Many applications of the Energy Commission's demand forecasts require more disaggregation than the planning area level at which the Energy Commission's models operate. Electricity system analysis requires identification of load by congestion zone or load pocket. Evaluation of progress toward renewable energy goals requires sales data by individual LSEs. Development of energy efficiency goals also requires projections of per capita sales by LSEs. To support these analyses, staff has disaggregated the planning area forecasts into IOU bundled, direct access, and major publicly owned utility (POU) forecasts. The disaggregated forecasts are shown in the tables following this chapter.

The energy forecasts were disaggregated using LSE-level historical sales data by economic sector and sector growth rates from the applicable planning area. Direct access load was assumed to grow at half the sector growth rate. The disaggregated peak forecasts were then derived by applying sector load factors to the disaggregated energy forecast. Commercial and residential load factors were adjusted for LSEs with load that is more or less weather sensitive than the planning area as a whole, so that the resulting peak forecasts were consistent with each LSEs historical peak demand and load factors.

The remainder of this chapter presents an overview of the statewide forecast and the methods and assumptions used. Subsequent chapters present the forecast for each of the major electric planning areas in the State, followed by a chapter on the natural gas forecast. Table 1-2 shows the planning area definitions used for this forecast.

Table 1-2: Utilities within Forecasting Areas

Planning/Service Area	Utilities Included	
Electric Areas		
Pacific Gas and Electric (PG&E)	PG&E	Palo Alto
	Alameda	Plumas – Sierra
	Biggs	Redding
	Calaveras	Roseville
	Gridley	San Francisco
	Healdsburg	Shasta
	Lassen MUD	Silicon Valley
	Lodi	Tuolumne

	Lompoc Merced Modesto	Turlock Irrigation District Ukiah USBR-CVP
Sacramento Municipal Utility District (SMUD)	SMUD	
Southern California Edison (SCE)	Anaheim Anza Azusa Banning Colton MWD	Riverside Southern California Edison Southern California Water USBR-Parker Davis Valley Electric Vernon
Los Angeles Department of Water and Power (LADWP)	LADWP	
San Diego Gas and Electric (SDG&E)	SDG&E	
Cities of Burbank, Glendale, and Pasadena (BGP)	Burbank Glendale Pasadena	
Other Planning Area (OTHER)	Pacificorp Sierra Pacific Surprise Valley	Truckee-Donner Imperial Irrigation District (IID)
Department of Water Resources (DWR)	DWR	
Natural Gas Distribution Areas		
PG&E	PG&E Electric Planning Area SMUD	
SDG&E	SDG&E	
Southern California Gas Company (SCG)	SCG Long Beach	
OTHER	Avista Energy Southwest Gas Corporation	

Statewide Forecast Results

Table 1-3 presents a comparison of the new forecast cases with the staff draft forecast published in June 2005 for select years. The base case forecast is almost identical to the June 2005 forecast. The 2004 recorded values were lower than projected due to cooler-than-average temperatures, so that in 2004 statewide electricity consumption was approximately 0.5 percent lower than forecasted. The base case has a slightly higher growth rate, while increased growth in the residential sector from higher income more than offset the reduction in the industrial sector.

The base case peak forecast grows at 1.5 percent annually, similar to the June 2005 forecast. In the high case, demand grows at almost 1.8 percent annually. As in the June 2005 forecast, the primary reason for the higher growth rate of the peak forecast, compared with the electricity consumption forecast, is a reduction in the estimated peak impacts of the 2005 federal air conditioning standard. . While the 2005 standard's movement to a seasonal energy efficiency ratio (SEER) is accounted for in the energy consumption projection, it is not included in the peak

forecast. Some analyses have found considerable uncertainty as to whether the move to a higher SEER will actually reduce peak demand.[3]

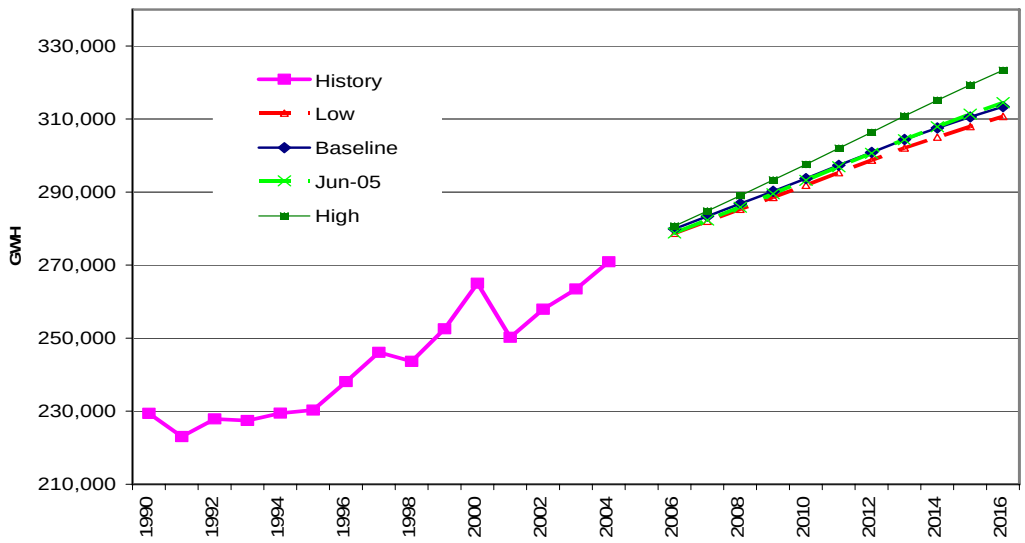
Table 1-3: Comparison of Revised and June 2005 Forecasts Statewide Electricity Demand

Consumption (GWH)[a]						
	Jun-05	Low	Base	High	Percent Difference Base/Jun-05	Percent Difference High/Low
1990	229,367	229,375	229,375	229,375	0.00%	0.00%
2000	262,985	265,021	265,021	265,021	0.77%	0.00%
2004	272,386	270,927	270,927	270,927	-0.54%	0.00%
2008	285,867	285,317	286,813	289,002	0.33%	1.29%
2013	304,355	302,059	304,400	310,869	0.01%	2.92%
2016	314,471	310,716	313,397	323,372	-0.34%	4.07%
Annual Average Growth Rates						
1990-2000	1.38%	1.45%	1.45%	1.45%		
2000-2004	0.88%	0.55%	0.55%	0.55%		
2004-2008	1.21%	1.30%	1.43%	1.63%		
2004-2016	1.20%	1.15%	1.22%	1.49%		
Peak (MW) [b]						
	Jun-05	Low	Base	High	Percent Difference Base/Jun-05	Percent Difference High/Low
1990	46,907	47,307	47,307	47,307	0.85%	0.00%
2000	53,758	54,355	54,355	54,355	1.11%	0.00%
2004	56,339	55,878	55,878	55,878	-0.82%	0.00%
2009	60,878	60,640	61,042	61,592	0.27%	1.57%
2013	65,144	64,515	65,144	66,592	0.00%	3.22%
2016	67,569	66,656	67,379	69,542	-0.28%	4.33%
Annual Average Growth Rates						
1990-2000	1.37%	1.40%	1.40%	1.40%		
2000-2004	1.18%	0.69%	0.69%	0.69%		
2004-2009	1.96%	2.07%	2.23%	2.46%		
2004-2016	1.53%	1.48%	1.57%	1.84%		
Historic values are shaded						
a) GWH=gigawatt-hour						
b) MW = megawatt						

Annual Energy Usage

At the statewide level, the base case forecast is almost identical to the June 2005 forecast. In the high case, consumption grows an additional 10,000 gigawatt-hours (gWh) by 2016.

Figure 1-1: Statewide Electricity Consumption



Per capita electricity consumption, shown in Figure 1-2, is projected to remain relatively constant over the forecast period at just below 7500 kilowatt-hours (kWh) per person. In the high case, use per capita increases to almost 7700 kWh, while in the low case it declines to 7,400 kWh. Over the past 15 years per capita consumption has been relatively constant, fluctuating between 7,200 and 7,800 kWh per person, depending upon economic conditions.

Figure 1-3 shows consumption by economic sector for the base case and June 2005 forecasts. Over the historical period, the commercial sector has had the highest growth, followed by the residential sector. In the forecast period the residential sector continues to grow at the historical rate of 1.8 percent , while the commercial sector slows to 1 percent annual growth. The residential forecast has a slightly higher growth rate than in June 2005, reflecting more growth in personal income. The largest difference between the June 2005 and revised forecasts is in the industrial sector. The base case industrial forecast is lower to more accurately account for historical trends in energy use intensity. The increase in the mining sector (primarily oil and natural gas extraction) reflects increasing energy intensity in that sector. Differences in other sectors reflect the effects of calibrating the forecast to actual 2004 consumption.

Figure 1-2: Statewide Electricity Consumption per Capita

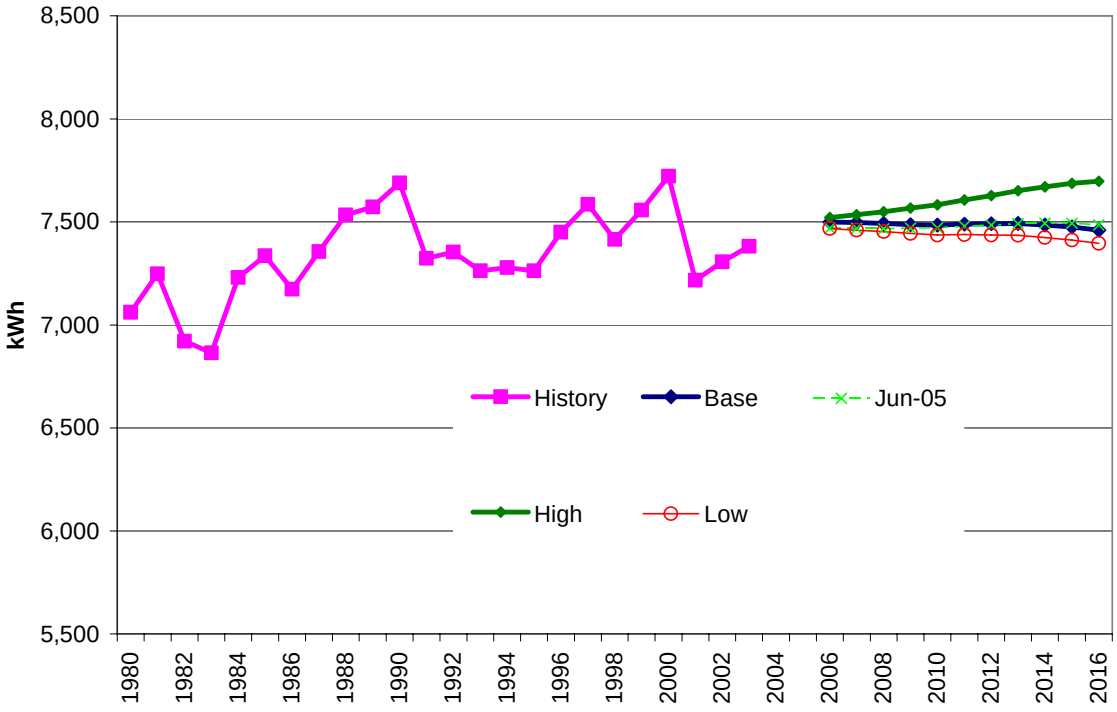
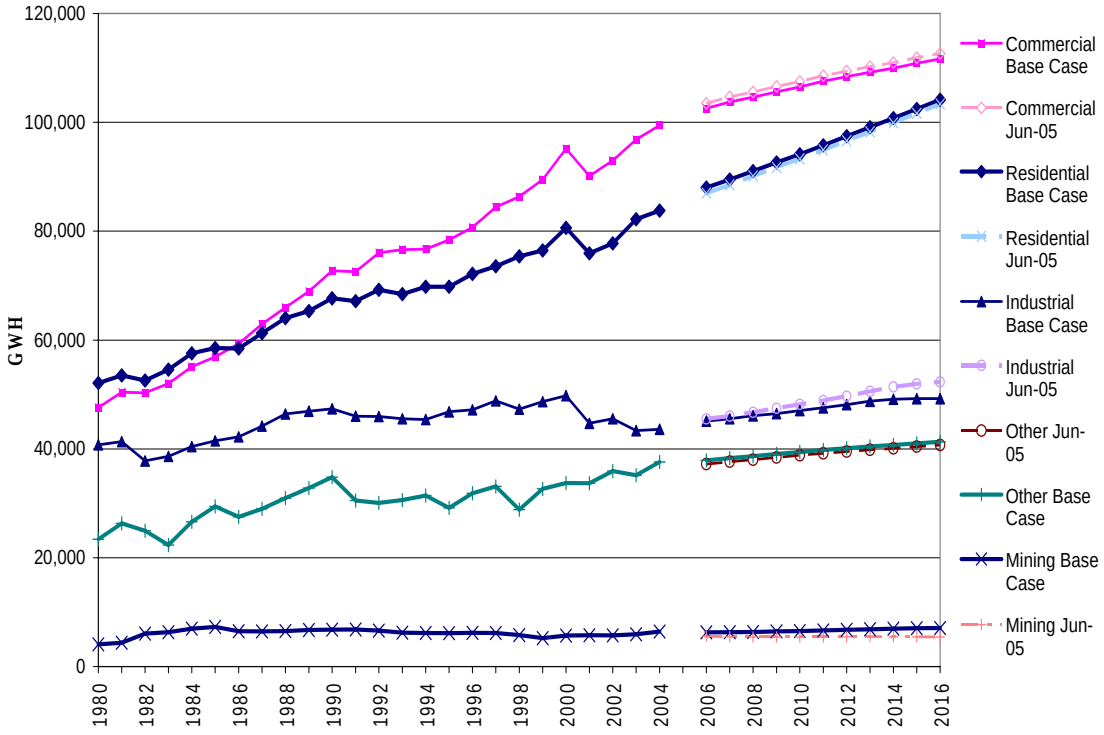


Figure 1-3: Statewide Electricity Consumption by Sector



To support sub-regional electricity system analysis, staff disaggregates its planning area forecasts to correspond to control areas and congestion zones. Table 1-3 shows the forecast of energy required to meet demand by control area and congestion zone. Demand is expected to grow the fastest in the newly enlarged Sacramento Municipal Utility District (SMUD) control area, reflecting strong population growth in Sacramento, Roseville, and Redding.[4] In the CA ISO control area, demand is projected to grow fastest in southern California over the next five years.

Table 1-3: Base Case Control Area Net Energy for Load (GWH)

	NP 15/ ZP 26	South of Path 15	Total CAISO	SMUD Control Area	LADWP Control Area	Total Other Areas	Total State
2000	99,632	125,822	225,455	17,392	27,442	6,363	276,652
2004	99,936	126,415	226,350	19,204	29,089	7,287	281,930
2008	105,844	133,971	239,815	20,739	30,110	7,725	298,389
2016	116,327	146,655	262,982	24,024	30,606	8,531	326,143
Annual Growth Rates							
2000-2004	0.08%	0.12%	0.10%	2.51%	1.47%	3.45%	0.47%
2004-2008	1.45%	1.46%	1.46%	1.94%	0.87%	1.47%	1.43%
2008-2016	1.19%	1.14%	1.16%	1.85%	0.20%	1.25%	1.12%

Statewide Peak Demand

Figure 1-4 compares the new forecasts of statewide non-coincident peak demand with the June 2005 forecast. The base case forecast is essentially the same as the June 2005 forecast. The high case, driven by higher incomes and nonresidential energy intensity, increases by almost 1,000 MW per year, compared with less than 800 MW per year in the base case. In the low case, slower demand growth in the residential and commercial sectors slows growth to 750 MW per year.

As in the June 2005 forecast, per capita non-coincident peak, shown in Figure 1-5, is projected to increase very slightly over the forecast. The increase from 2004 to 2006 reflects below-average temperatures experienced in 2004. Historical per capita peak exhibits greater variation than does annual electricity consumption because of the greater impact of temperature variation on peak demand.

Figure 1-4: Statewide Non-Coincident Peak Demand

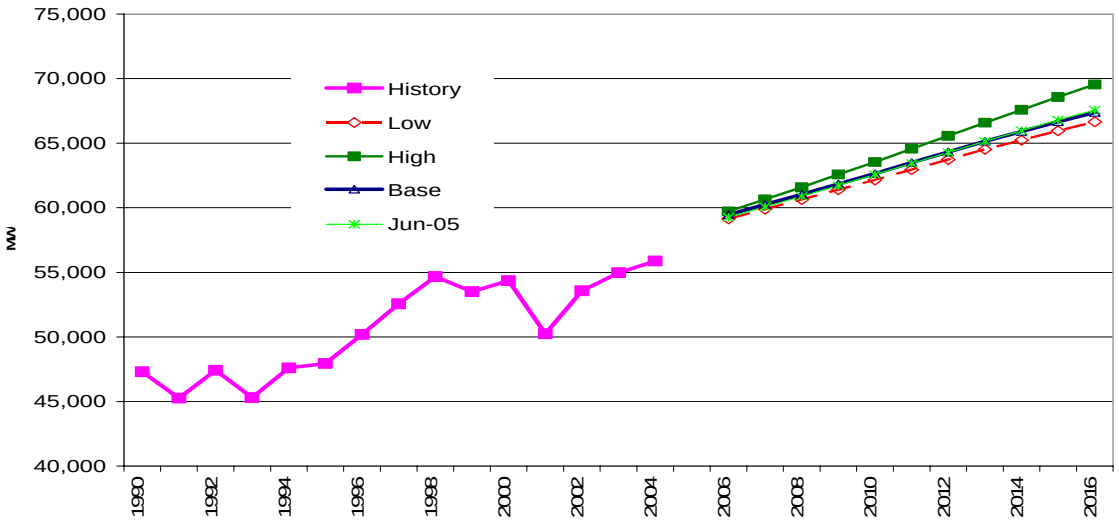


Figure 1-5: Statewide Non-Coincident Peak Demand per Capita

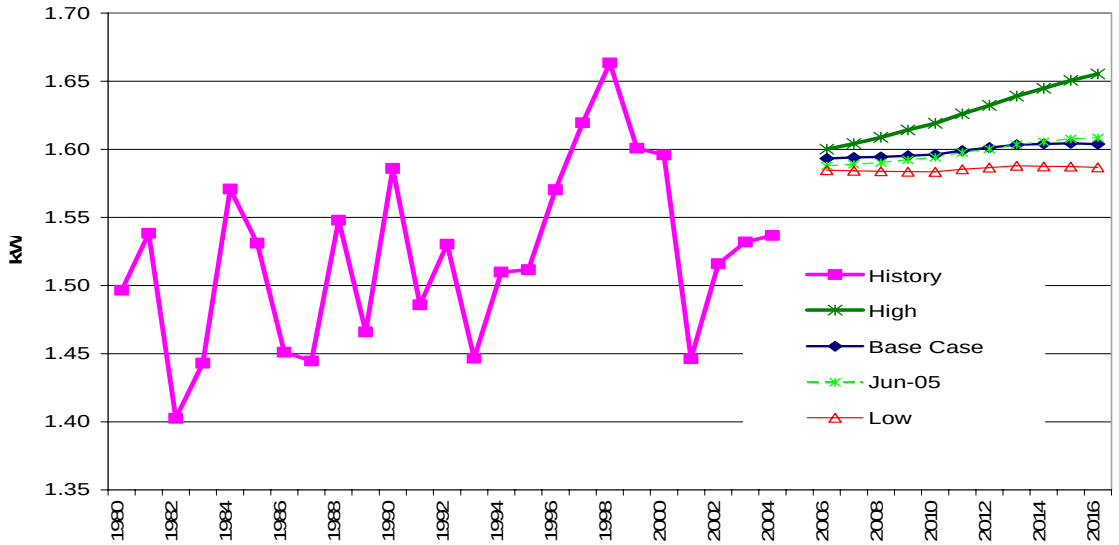


Figure 1-6 shows peak demand for the major economic sectors. As in the consumption forecast, residential demand grows fastest at about 1.8 percent annually. Commercial sector peak demand, slowed by lighting standards, grows at less than 1 percent. Industrial peak demand also grows at less than 1 percent annually, about the same as industrial energy growth.

Figure 1-6: Statewide Peak Demand by Sector (MW)

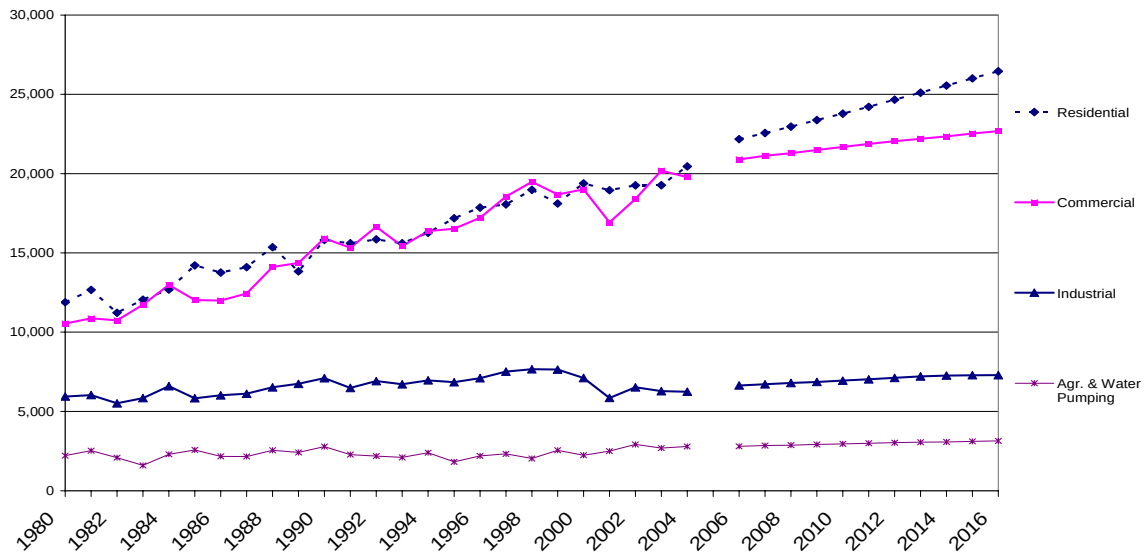


Table 1-4 shows peak demand by control area. As in the energy forecast, the SMUD area grows the fastest, with demand increasing by 1,400 MW by 2016. The south of Path 15 zone of the CA ISO is forecasted to add about 5,600 MW of load by the end of the forecast.

Table 1-4: Annual Peak Demand (MW) By Control Area and Congestion Zone

	NP 15/ ZP 26	South of Path 15	Total CAISO	SMUD Control Area	LADWP Control Area	Total Other Areas	Total State
2000	19,549	23,838	43,388	3,738	5,882	1,347	54,355
2004	18,869	25,218	44,087	4,244	6,008	1,539	55,878
2008	20,464	27,734	48,198	4,783	6,406	1,655	61,042
2016	22,692	30,694	53,386	5,667	6,495	1,832	67,379
Annual Growth Rates							
2000-2004	-0.88%	1.42%	0.40%	3.22%	0.53%	3.38%	0.69%
2004-2008	2.05%	2.41%	2.25%	3.03%	1.62%	1.84%	2.23%
2008-2016	1.30%	1.28%	1.29%	2.14%	0.17%	1.27%	1.24%

Overview of Methods and Assumptions

The CED 2006 forecast is essentially the product of the same methods used to prepare earlier long-term staff demand forecasts. Models for the major economic sectors produce forecasts of annual energy consumption in each utility planning area. After adjusting for historical weather and usage, the annual consumption forecast is used to forecast annual peak demand.

The commercial, residential, and industrial sector energy models are structural models that attempt to explain how energy is used by process and end use. Structural models are critical in accounting for the impacts of mandatory energy efficiency standards and other energy efficiency programs seeking to force or encourage adoption of more efficient technologies by end users. This is especially true in the context of the major emphasis upon energy efficiency in California.

Some of the methods that translate primary economic and demographic variables into sector-specific drivers were updated for this forecast. Additional historical data allows different periods to be used for preparing parameter estimates and calibrating the results of the backcasts to recorded data. The degradation of the quality of the historical consumption data reported by LSEs through the NAICS regulations has introduced some uncertainty about the allocation of energy between economic sectors, leading to some differences in customer sector-specific forecasts in this cycle, compared with earlier ones.

A more detailed presentation of forecast methods is available in the *Energy Demand Forecast Methods Report,,* CEC publication CEC-400-2005-036.

Economic and Demographic Assumptions

Population growth is a key driver for residential energy demand, as well as for commercial growth and demand for water pumping and other services. The revised forecasts continue to use the May 2004 P-1 long-term population forecast, made by the California Department of Finance (DOF).[5] The population forecast used in the CED 2003 forecast was the previous long-term DOF forecast, made in 1998.

Figure 1-7 compares these two population projections. DOF's new forecast is lower than the previous one because of lower immigration and fertility assumptions. As a result, population is projected to grow at about 1.2 percent annually, compared with 1.4 percent in previous projections. By comparison, statewide population grew an average of 1.3 percent annually from 1990 to 2000.

Figure 1-8 presents a comparison of statewide household income. The baseline forecast uses slightly higher household income, derived from the June 2005 Economy.com economic forecast. The persons-per-household assumption used to calculate household income is also higher in 2004, based upon new DOF population estimates. This higher persons-per-household assumption also serves to increase the household income projections. For the low case, staff used the income

assumptions from the June 2005 forecast with the revised persons per household. For the high case, staff used the new income but held persons per household constant. Holding persons per household constant implies more households, so while the income per household for the high case is lower than the base case, that effect is offset by more households in the high case. Also included in the new base case are revised 2001-2004 county population and housing estimates recently released by the DOF.[6]

Figure 1-7: Total Statewide Population

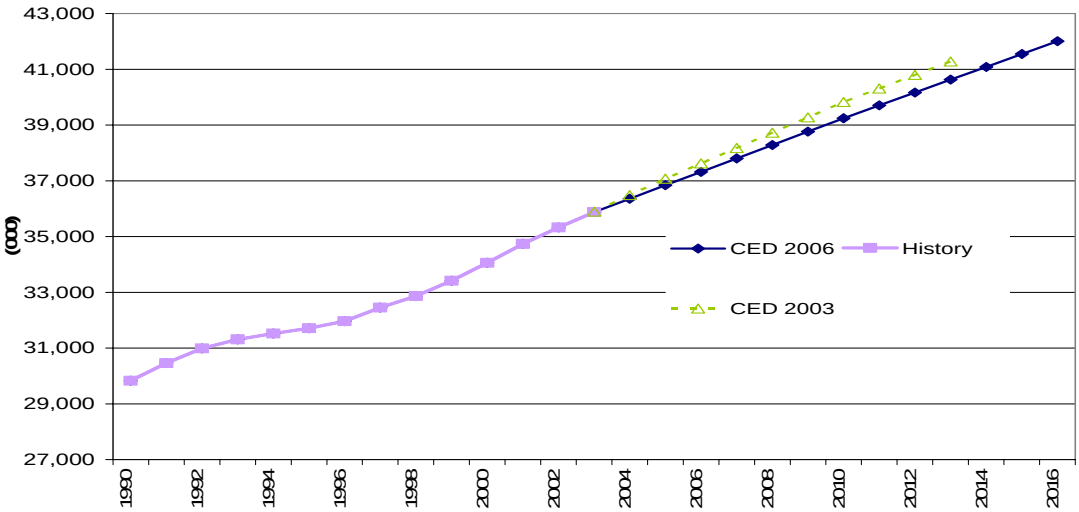
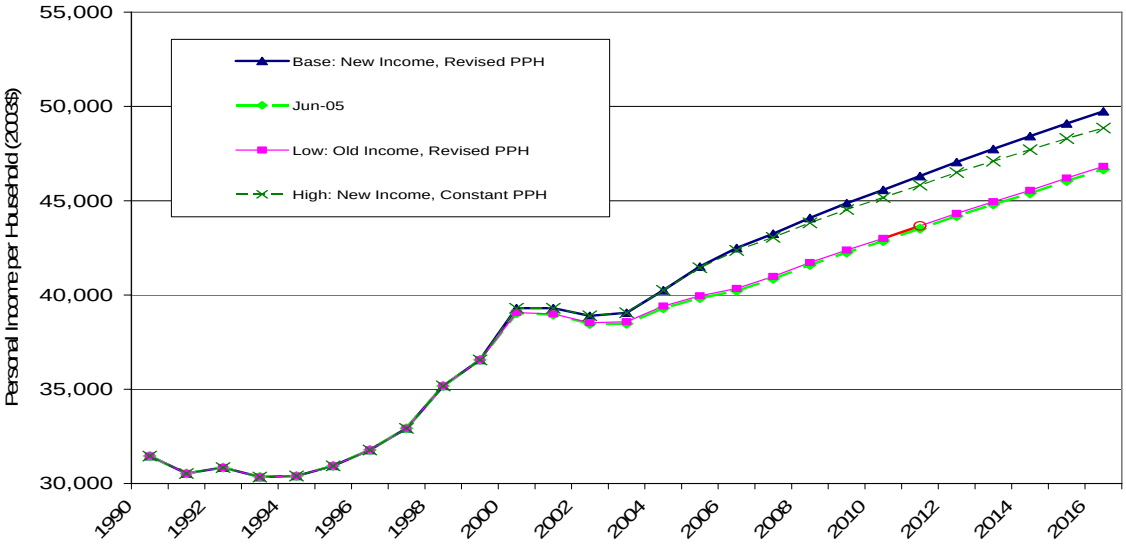


Figure 1-8: Household Income ($2003)



Programmatic Assumptions

Investor-Owned Utility Energy Efficiency Goals

In decision D.04-09-060, the CPUC established numeric goals for electricity and natural gas savings for the State's IOUs for the years 2004-2013.[7] D.04-09-060 implements a core component of the Energy Action Plan (EAP), which was earlier adopted by the CPUC, the Energy Commission and the California Consumer Power and Conservation Financing Authority. The decision translated that mandate into explicit, numeric goals for reducing electricity and natural gas consumption, as well as peak demand. Savings from energy efficiency programs funded by the public goods charge and procurement rates will contribute to these goals, including those achieved through the Low-Income Efficiency Program.

The decision requires incorporation of the most recently adopted energy savings goals into procurement plan cycles. This is reinforced in D.04-12-048, which requires that IOUs meet or exceed the CPUC's efficiency goals over the next ten years, and specifically over the next energy efficiency funding cycle (2006-2008). As the goals are updated, IOUs are to incorporate the most recently adopted goals into their procurement plans.

Because the post-2008 goals are subject to change, only the impacts of the energy efficiency goals through 2008 are accounted for in this forecast. The electricity and natural gas program savings goals used for each IOU are shown in Table 1-5. To account for these goals in the forecast, staff assumed continuation of each IOU's current mix of programs,, adjusting the funding level to achieve the goals. The resulting forecast of efficiency impacts was then used to adjust the raw residential and commercial demand forecasts.

Table 1-5: First Year Impacts of 2004-2008 Energy Efficiency Goals

	PG&E			SCE		SCG	SDG&E		
	Gwh	MW	MM Therms	Gwh	MW	MM Therms	Gwh	MW	MM Therms
2004	744	161	10.95	826	179	11.48	268	58	3.88
2005	744	161	21.25	826	179	13.37	268	58	3.72
2006	829	180	14.54	922	200	14.94	281	61	2.08
2007	944	205	16.54	1046	227	19.84	285	62	2.37
2008	1053	229	19.54	1167	253	23.51	284	62	3.00

Demand Response

The term "demand response" encompasses a variety of programs, including traditional direct control (interruptible) programs and new price-responsive demand programs. A key distinction is whether the program is dispatchable. Dispatchable programs, such as direct control, interruptible tariffs, or demand bidding programs,

have triggering conditions that are not under the control of (and therefore cannot be anticipated by) the customer. Energy or peak load saved from dispatchable programs is treated as a resource and is not accounted for in the demand forecast. Nondispatchable programs are not activated using a predetermined threshold condition, but rather allow the customer to make the economic choice whether to modify usage in response to ongoing price signals. Impacts from committed nondispatchable programs should be included in the demand forecast.

At this time, all of the existing demand response programs have some form of triggering condition. Although the utility or CA ISO may not have direct control, the customer only has the opportunity to participate in the program when the program operator has called an event - either because of high market prices or resource scarcity. Therefore, in this forecast, no demand response impacts are counted on the demand side.

Self-Generation

Assembly Bill 970 required the CPUC to initiate load control and distributed generation program activities designed to produce significant public benefits. In response, on March 27, 2001, the CPUC issued Decision 01-03-073 (D.01-03-073), mandating a self-generation program in the service territories of California's IOUs. The California Self-Generation Incentive Program (SGIP) offers financial incentives to IOU customers who install certain types of distributed generation facilities to meet all or a portion of their energy needs. The program began in mid-2001 and is scheduled to continue, offering incentives for completed projects through the end of 2007.

To forecast future self-generation load, staff used both the IOU reports on completed new interconnections and pending applications to develop projections of capacity additions of new interconnections.[8] It is assumed that new additions will continue at the current rate through the life of the SGIP program. After 2007, self-generated loads are assumed to grow at the rate of the utilities' noncommercial sector.

The interconnection reports provide a detailed picture of capacity addition trends. To translate self-generation capacity into effects on system peak demand requires assumptions about load shape, the coincidence of self-generation peak with system peak, and the extent to which self-generation units are operating during peak hours. Staff used results of the 2004 evaluation of the SGIP program for these assumptions.[9] For example, this study found that the load impact at the time of the 2004 CA ISO peak was 58 MW, out of 103 MW of installed capacity.

Table 1-7 shows the resulting forecast. Consumption reported by self-generators in 2004 was 3.6 percent lower than in the June 2005 forecast.[10] Staff does not have a reliable data source for historical self-generated peak. The CED 2006 historical peak data assumes a common load factor of 0.68, consistent with that assumed in the forecast.

Table 1-7: Self-Generation Demand Forecast

	Consumption (GWH)				Demand at System Peak (MW)		
	Jun-05	Baseline	Percent Difference		Jun-05	Baseline	Percent Difference
1990	8,784	8,784	0.00%		1,475	1,475	0.00%
2000	9,998	9,998	0.00%		1,678	1,678	0.00%
2004	11,431	10,996	-3.80%		1,919	1,846	-3.80%
2009	12,282	11,827	-3.70%		2,062	1,986	-3.70%
2016	13,123	12,633	-3.73%		2,203	2,121	-3.73%
Annual Average Growth Rates							
1990-2000	1.30%	1.30%			1.30%	1.30%	
2000-2004	3.40%	2.41%			3.40%	2.41%	
2004-2008	1.81%	1.84%			1.81%	1.84%	
2004-2016	1.16%	1.16%			1.16%	1.16%	
Historic values are shaded							

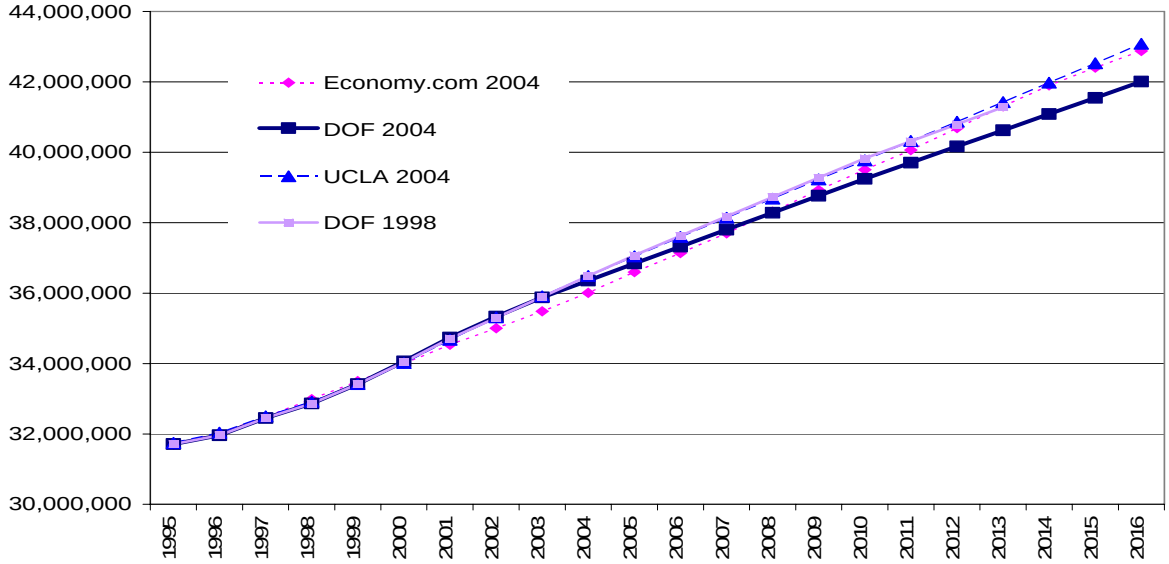
Forecast Uncertainty

There are many issues regarding uncertainty of the current 2006-2016 forecast (for example future economic conditions, energy prices, changing weather patterns), but the two major sources of uncertainty center around population projections and the accuracy of recent historical electricity consumption reporting. The first affects both peak and energy similarly, while the later has uncertain impacts that could differ between peak and energy consumption.

Population Projections

Staff has used the May 2004 DOF P-1 long-term population projections for the demographic basis of the CED 2006-2016 forecast. The May 2004 population forecast is somewhat lower (600,000 persons in 2013) than the 1998 DOF long-term population projections used in the CED 2003 forecast, due to lower immigration and fertility assumptions. Figure 1-9 presents a comparison of the two DOF statewide total population forecasts,as well as the September 2004 UCLA Anderson School of Business and the October 2004 economy.com forecast (which is based on the Census Bureau population projections). Of the four forecasts, the May DOF forecast has the lowest population projections throughout the forecast period. Differences between the DOF forecast and the other forecasts are greater at the regional level and will be discussed in the specific planning area chapters.

Figure 1-9: Statewide Population Forecast Comparison



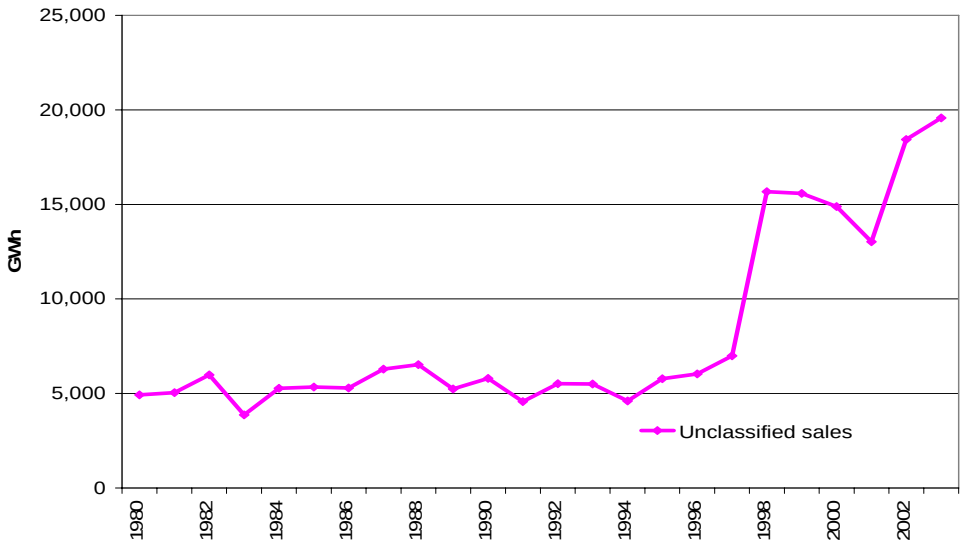
Historical Electricity Consumption Estimates

Energy Commission demand forecasting models are organized by sector, according to economic activity (commercial, industrial, and agricultural). Each of these forecasting models develops a forecast based on subactivities within the sector, such as commercial building type or industrial activity. Under the Energy Commission's Quarterly Fuel and Energy Reporting (QFER) regulations, each LSE is required to file monthly and annual reports that document energy consumption by activity group. In the past this reporting was to conform to the Standard Industrial Classification (SIC) system. More recently this system was revised to the NAICS[11]. The switch to NAICS has caused some difficulty in identifying the appropriate economic classification of many energy users. The result of this change, along with a lack of reporting regulation adherence by various LSEs, is lower quality of the Energy Commission's historical record of sector specific consumption. Unclassified sales — consumption which the LSE has not identified by a NAICS category and that staff therefore cannot map to a customer sector — is now the fastest growing category of consumption reported to the Energy Commission.

Figure 1-10 shows the total statewide pattern of unclassified sales from 1980 to 2003. The largest increase coincided with the advent of the restructured electric industry. Under current reporting requirements, IOUs are required to identify the economic classification of direct access customers and provide that information to the direct access provider. Much of the increase in unclassified is in direct access customers identified by IOUs as unclassified.

This electricity has been allocated to economic sectors using professional judgment by staff, but this problem needs to be corrected in the near future for the forecasting process to again be a reliable tool for planning or policy analysis. If staff does not know more precisely how much electricity each economic sector is really using, staff cannot correctly quantify the effects of energy efficiency programs or standards on demand, or apply the correct load shapes for forecasting peak. The forecast may be overestimating or underestimating demand growth, depending upon the true distribution of unclassified sales.

Figure 1-10: Total Statewide Unclassified Sales



[1] The Forecast Comparison Report presented a comparison of the staff forecast with the forecasts submitted to the Energy Commission by load serving entities earlier this year. The Methodology Report will document in more detail the methods and assumptions used in the Energy Commission's demand forecasting models. These reports and supporting tables will be posted on the Energy Commission website at:[http://www.energy.ca.gov/energypolicy/index.html].

[2] Peevey, Assigned Commissioner's Ruling on Interaction Between the CPUC Long-Term planning process and the California Energy Commission Integrated Energy Policy Report process, September 9, 2004 Rulemaking 04-04-003.

[3] "EER and SEER as Predictors of Seasonal Cooling Performance," Southern California Edison, December 15, 2003.

[4] The definition of the SMUD Control Area does not include annexation of those portions of Yolo County that have requested it.

[5] State of California, Department of Finance, Population Projections by Race/Ethnicity for California and Its Counties 2000–2050, Sacramento, California, May 2004.

[6] State of California, Department of Finance, E-5 City/County Population and Housing Estimates , Revised 2001-2004,with 2000 DRU Benchmark. May 2005.

[7] Interim Opinion: Energy Savings Goals for Program Year 2006 and Beyond, D. 04-09-040, September 23, 2004, in Energy Efficiency Rulemaking 01-08-028.

[8] Rule 21 Statistics - approved and pending, [http://www.energy.ca.gov/distgen/interconnection/rule21_stats.html].

[9] CPUC Self-Generation Incentive Program Fourth-Year Impact Report Final Report, ITRON, Submitted to Southern California Edison and The Self-Generation Incentive Program Working Group, April 15, 2005.

[10] Beginning in 1990 all self-generators with peak demand above ten megawatts reported their energy consumption, but staff continued to use estimates provided by the IOUs of planning area self-generation. Since 2001, all self-generators with annual peak demand greater than one megawatt report their annual energy usage to the Energy Commission. With the June 2005 forecast, staff began to use the self-generator data, which is significantly lower than the utility-provided estimates.

[11] As a result of NAFTA, the federal government replaced the SIC system with the NAICS system. In turn, the Energy Commission modified its regulations requiring utilities to classify all end users from SIC to NAICS to allow economic data to be matched to utility consumption data.

Form 1.1a - Statewide
Electricity Consumption by Sector (GWh)

	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighting	Total Consumption
1980	52,082	47,600	40,771	4,104	13,737	7,956	1,685	167,935
1981	53,495	50,419	41,350	4,387	16,402	8,260	1,643	175,957
1982	52,574	50,297	37,784	6,061	14,507	8,759	1,706	171,688
1983	54,577	52,023	38,624	6,322	11,610	9,135	1,604	173,896
1984	57,564	55,092	40,411	6,978	15,320	9,766	1,535	186,666
1985	58,528	56,908	41,496	7,329	17,453	10,423	1,537	193,673
1986	58,452	59,306	42,232	6,514	15,940	10,084	1,512	194,038
1987	61,267	62,949	44,182	6,463	16,409	11,058	1,536	203,865
1988	64,033	65,958	46,421	6,535	17,995	11,465	1,494	213,902
1989	65,316	68,932	46,942	6,719	19,225	12,087	1,507	220,728
1990	67,667	72,753	47,384	6,786	20,774	12,430	1,580	229,375
1991	67,142	72,540	46,004	6,835	16,266	12,640	1,614	223,040
1992	69,225	76,018	45,928	6,600	15,471	12,967	1,652	227,862
1993	68,424	76,604	45,532	6,262	15,902	13,059	1,648	227,431
1994	69,774	76,687	45,388	6,160	16,948	12,842	1,649	229,448
1995	69,770	78,409	46,834	6,148	14,301	13,238	1,624	230,323
1996	72,164	80,709	47,207	6,202	16,874	13,293	1,660	238,108
1997	73,547	84,442	48,847	6,174	17,514	13,914	1,701	246,140
1998	75,387	86,330	47,294	5,794	13,485	13,608	1,758	243,657
1999	76,482	89,466	48,695	5,233	17,097	13,921	1,658	252,552
2000	80,612	95,148	49,801	5,713	17,532	14,486	1,730	265,021
2001	75,916	90,130	44,693	5,786	18,921	13,068	1,727	250,241
2002	77,731	92,978	45,557	5,724	21,057	13,152	1,715	257,914
2003	82,196	96,816	43,353	5,946	20,274	13,132	1,751	263,468
2004	83,774	99,467	43,617	6,446	22,246	13,589	1,787	270,927
2006	88,032	102,562	45,101	6,295	22,305	13,828	1,764	279,886
2007	89,497	103,739	45,544	6,306	22,593	13,945	1,775	283,399
2008	91,059	104,602	46,099	6,364	22,842	14,061	1,786	286,813
2009	92,607	105,616	46,482	6,454	23,102	14,174	1,795	290,230
2010	94,134	106,530	47,034	6,560	23,368	14,285	1,804	293,715
2011	95,764	107,564	47,544	6,666	23,615	14,389	1,814	297,355
2012	97,431	108,395	48,157	6,769	23,819	14,490	1,823	300,885
2013	99,084	109,227	48,751	6,875	24,041	14,590	1,831	304,400
2014	100,755	109,943	49,135	6,987	24,189	14,688	1,840	307,538
2015	102,448	110,847	49,222	7,052	24,387	14,784	1,848	310,588
2016	104,128	111,624	49,250	7,088	24,571	14,879	1,857	313,397
Annual Growth Rates (%)								
1980-1990	2.7	4.3	1.5	5.2	4.2	4.6	-0.6	3.2
1990-2000	1.8	2.7	0.5	-1.7	-1.7	1.5	0.9	1.5
2000-2004	1.0	1.1	-3.3	3.1	6.1	-1.6	0.8	0.6
2004-2008	2.1	1.3	1.4	-0.3	0.7	0.9	0.0	1.4
2008-2016	1.7	0.8	0.8	1.4	0.9	0.7	0.5	1.1
2004-2016	1.8	1.0	1.0	0.8	0.8	0.8	0.3	1.2

Form 1.1b - Statewide
Electricity Sales by Sector (GWh)

	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighting	Total Consumption
1980	52,082	47,575	39,876	4,104	13,737	7,956	1,685	167,014
1981	53,495	50,394	40,444	4,387	16,402	8,257	1,643	175,023
1982	52,574	50,258	36,737	6,015	14,507	8,659	1,706	170,457
1983	54,577	51,880	36,851	6,215	11,606	9,020	1,604	171,754
1984	57,564	54,898	38,547	6,739	15,317	9,607	1,535	184,207
1985	58,528	56,606	39,463	7,032	17,446	10,183	1,537	190,796
1986	58,450	58,941	39,689	5,927	15,931	9,745	1,512	190,194
1987	61,263	62,396	40,548	5,633	16,398	10,623	1,536	198,398
1988	64,028	65,119	41,079	5,570	17,978	10,969	1,494	206,237
1989	65,310	68,036	41,231	5,422	19,207	11,559	1,507	212,272
1990	67,661	71,745	41,595	5,392	20,756	11,863	1,580	220,591
1991	67,135	71,482	40,253	5,334	16,247	12,056	1,614	214,121
1992	69,219	74,936	40,266	5,092	15,451	12,405	1,652	219,022
1993	68,417	75,463	38,963	4,810	15,886	12,421	1,648	217,610
1994	69,774	75,318	38,536	4,577	16,933	12,192	1,649	218,978
1995	69,770	77,003	39,973	4,565	14,286	12,567	1,624	219,787
1996	72,164	79,356	39,786	4,619	16,859	12,753	1,660	227,195
1997	73,546	83,039	41,312	4,507	17,499	13,363	1,701	234,968
1998	75,387	84,931	40,167	4,113	13,470	13,129	1,758	232,955
1999	76,482	88,055	41,506	3,759	17,097	13,465	1,658	242,023
2000	80,612	93,766	43,116	4,231	17,532	14,036	1,730	255,022
2001	75,916	89,527	38,492	3,711	18,921	12,638	1,727	240,931
2002	77,731	92,228	38,372	3,424	21,057	12,769	1,715	247,297
2003	82,196	96,019	35,797	3,513	20,274	12,784	1,751	252,334
2004	83,774	98,664	36,159	4,057	22,246	13,243	1,787	259,931
2006	88,032	101,724	37,387	3,817	22,305	13,469	1,764	268,497
2007	89,497	102,884	37,702	3,785	22,593	13,579	1,775	271,814
2008	91,059	103,740	38,182	3,815	22,842	13,690	1,786	275,114
2009	92,607	104,746	38,480	3,874	23,102	13,799	1,795	278,402
2010	94,134	105,651	38,949	3,950	23,368	13,906	1,804	281,763
2011	95,764	106,678	39,372	4,025	23,615	14,005	1,814	285,272
2012	97,431	107,501	39,906	4,099	23,819	14,103	1,823	288,682
2013	99,084	108,325	40,416	4,174	24,041	14,198	1,831	292,071
2014	100,755	109,035	40,725	4,259	24,189	14,292	1,840	295,095
2015	102,448	109,932	40,743	4,298	24,387	14,384	1,848	298,038
2016	104,128	110,704	40,715	4,314	24,571	14,475	1,857	300,764
Annual Growth Rates (%)								
1980-1990	2.7	4.2	0.4	2.8	4.2	4.1	-0.6	2.8
1990-2000	1.8	2.7	0.4	-2.4	-1.7	1.7	0.9	1.5
2000-2004	1.0	1.3	-4.3	-1.0	6.1	-1.4	0.8	0.5
2004-2008	2.1	1.3	1.4	-1.5	0.7	0.8	0.0	1.4
2008-2016	1.7	0.8	0.8	1.5	0.9	0.7	0.5	1.1
2004-2016	1.8	1.0	1.0	0.5	0.8	0.7	0.3	1.2

Form 1.c - Statewide Retail Sales by Utility (GWh)

	PG&E Planning Area					SMUD	SCE Planning Area					LADWP	SDG&E Planning Area			BGP	OTHER	DWR	TOTAL
Year	Bundled Customers	Direct Access Sales	PG&E Service Area Total	Public Utility Sales	Total Planning Area	Service Area	Bundled Customers	Direct Access Sales	SCE Service Area Total	Public Utility Sales	Total Planning Area		Bundled Customers	Direct Access Sales	Total Planning Area				
1980	55,452	0	55,452	10,658	66,110	5,352	53,485	0	53,485	5,870	59,355	18,059	9,729	0	9,729	2,378	2,677	3,354	167,014
1981	58,336	0	58,336	10,993	69,329	5,695	55,220	0	55,220	6,116	61,336	18,359	9,804	0	9,804	2,455	2,781	5,264	175,023
1982	56,755	0	56,755	10,548	67,303	5,683	53,316	0	53,316	5,696	59,013	18,265	9,939	0	9,939	2,401	2,660	5,192	170,457
1983	57,363	0	57,363	10,792	68,155	5,956	55,251	0	55,251	5,922	61,173	18,799	10,143	0	10,143	2,436	2,595	2,497	171,754
1984	61,107	0	61,107	11,851	72,958	6,362	58,840	0	58,840	6,761	65,600	19,856	10,711	0	10,711	2,648	2,722	3,349	184,207
1985	63,059	0	63,059	12,198	75,258	6,884	60,117	0	60,117	6,883	66,999	19,835	10,938	0	10,938	2,702	2,770	5,410	190,796
1986	61,071	0	61,071	11,637	72,708	7,016	61,264	0	61,264	6,943	68,207	20,399	11,377	0	11,377	2,698	2,758	5,031	190,194
1987	63,950	0	63,950	12,317	76,267	7,419	64,106	0	64,106	7,247	71,353	21,065	11,930	0	11,930	2,757	2,872	4,734	198,398
1988	66,002	0	66,002	12,733	78,735	7,677	66,396	0	66,396	7,428	73,825	21,423	12,722	0	12,722	2,872	3,055	5,928	206,237
1989	67,546	0	67,546	13,045	80,591	7,927	68,208	0	68,208	7,305	75,513	21,363	13,437	0	13,437	2,824	3,205	7,413	212,272
1990	69,445	0	69,445	13,369	82,814	8,358	70,370	0	70,370	7,901	78,271	22,244	14,460	0	14,460	2,963	3,310	8,171	220,591
1991	69,571	0	69,571	13,214	82,785	8,349	68,996	0	68,996	7,787	76,783	21,417	14,294	0	14,294	2,770	3,323	4,400	214,121
1992	70,671	0	70,671	13,467	84,138	8,496	70,936	0	70,936	7,545	78,482	22,145	15,218	0	15,218	2,942	3,513	4,088	219,022
1993	70,654	0	70,654	13,382	84,036	8,435	69,876	0	69,876	7,654	77,529	21,498	15,134	0	15,134	3,004	3,602	4,372	217,610
1994	70,733	0	70,733	13,350	84,084	8,418	71,117	0	71,117	7,952	79,069	20,308	15,381	0	15,381	3,015	3,758	4,946	218,978
1995	71,797	0	71,797	13,467	85,264	8,458	71,548	0	71,548	7,577	79,124	20,939	15,524	0	15,524	3,097	3,819	3,562	219,787
1996	73,273	0	73,273	13,746	87,019	8,805	73,766	0	73,766	8,029	81,795	21,228	16,046	0	16,046	3,168	3,989	5,146	227,195
1997	76,241	0	76,241	14,327	90,568	9,006	76,011	0	76,011	8,345	84,356	21,605	16,698	0	16,698	3,251	3,980	5,504	234,968
1998	69,132	5,559	74,692	15,352	90,044	9,123	70,097	6,161	76,258	8,215	84,473	21,412	13,609	3,641	17,249	3,315	3,919	3,421	232,955
1999	71,106	7,958	79,063	14,710	93,773	9,326	69,388	8,819	78,207	8,588	86,794	21,434	12,719	5,211	17,931	3,257	4,017	5,490	242,023
2000	74,041	8,396	82,437	14,386	96,822	9,491	76,468	9,304	85,772	8,798	94,570	22,146	13,430	5,498	18,928	3,339	4,236	5,490	255,022
2001	73,907	3,780	77,687	14,013	91,700	9,070	74,845	3,645	78,490	8,757	87,246	21,404	14,999	2,464	17,463	3,299	4,399	6,349	240,931
2002	69,844	8,213	78,057	15,358	93,416	9,383	68,459	11,200	79,659	8,792	88,452	22,290	14,301	3,448	17,749	3,271	4,556	8,181	247,297
2003	70,569	8,471	79,040	15,368	94,408	9,924	70,617	11,571	82,188	7,735	89,923	23,044	15,045	3,340	18,385	3,291	4,494	8,865	252,334
2004	71,917	9,124	81,041	15,471	96,512	10,150	73,093	11,410	84,504	8,092	92,595	23,622	15,860	3,441	19,301	3,353	4,743	9,654	259,931
2006	74,562	9,279	83,842	15,879	99,720	10,706	75,916	11,566	87,481	8,362	95,843	24,337	16,492	3,492	19,984	3,358	4,894	9,654	268,497
2007	75,691	9,341	85,032	16,124	101,155	10,929	76,971	11,616	88,587	8,471	97,058	24,429	16,765	3,518	20,283	3,343	4,962	9,654	271,814
2008	76,701	9,396	86,097	16,322	102,420	11,178	78,069	11,669	89,738	8,588	98,325	24,537	17,101	3,551	20,652	3,328	5,020	9,654	275,114
2009	77,719	9,444	87,163	16,523	103,686	11,432	79,203	11,722	90,925	8,707	99,632	24,627	17,394	3,576	20,970	3,320	5,080	9,654	278,402
2010	78,877	9,507	88,384	16,756	105,140	11,688	80,246	11,771	92,017	8,818	100,835	24,720	17,676	3,601	21,277	3,304	5,145	9,654	281,763
2011	80,157	9,574	89,732	17,005	106,737	11,971	81,294	11,818	93,112	8,926	102,038	24,792	17,955	3,625	21,580	3,287	5,213	9,654	285,272
2012	81,265	9,633	90,898	17,205	108,103	12,267	82,440	11,874	94,314	9,047	103,361	24,869	18,236	3,649	21,885	3,270	5,272	9,654	288,682
2013	82,475	9,696	92,171	17,434	109,605	12,566	83,457	11,920	95,377	9,153	104,530	24,937	18,513	3,673	22,185	3,254	5,339	9,654	292,071
2014	83,416	9,735	93,150	17,585	110,735	12,869	84,511	11,964	96,476	9,258	105,734	24,989	18,786	3,695	22,481	3,238	5,395	9,654	295,095
2015	84,369	9,758	94,128	17,751	111,879	13,156	85,526	12,001	97,527	9,358	106,886	25,018	19,049	3,716	22,765	3,221	5,460	9,654	298,038
2016	85,311	9,780	95,091	17,914	113,006	13,435	86,381	12,025	98,406	9,441	107,846	25,048	19,310	3,735	23,045	3,204	5,526	9,654	300,764
Annual Growth Rates (%)																			
1990-2000	0.6		1.7	0.7	1.6	1.3	0.8		2.0	1.1	1.9	0.0	-0.7		2.7	1.2	2.5		1.5
2000-2004	-0.7	2.1	-0.4	1.8	-0.1	1.7	-1.1	5.2	-0.4	-2.1	-0.5	1.6	4.2	-11.1	0.5	0.1	2.9		0.5
2004-2008	1.6	0.7	1.5	1.3	1.5	2.4	1.7	0.6	1.5	1.5	1.5	1.0	1.9	0.8	1.7	-0.2	1.4		1.4
2008-2016	1.3	0.5	1.2	1.2	1.2	2.3	1.3	0.4	1.2	1.2	1.2	0.3	1.5	0.6	1.4	-0.5	1.2		1.1
2004-2016	1.4	0.6	1.3	1.2	1.3	2.4	1.4	0.4	1.3	1.3	1.3	0.5	1.7	0.7	1.5	-0.4	1.3		1.2

Retail Sales = Total Electricity Consumption - Self generation; it does not include transmission or distribution losses.

Form 1.2 - Statewide
Net Energy for Load (GWh)

Year	Total Consumption	Net Losses	Gross Generation	Private Supply	Net Energy for Load
1980	167,935	14,475	182,410	920	181,490
1981	175,957	15,078	191,034	934	190,100
1982	171,688	14,700	186,387	1,231	185,156
1983	173,896	14,924	188,820	2,142	186,678
1984	186,666	15,957	202,623	2,459	200,164
1985	193,673	16,408	210,081	2,877	207,203
1986	194,038	16,344	210,383	3,844	206,539
1987	203,865	17,062	220,927	5,466	215,460
1988	213,902	17,664	231,566	7,665	223,901
1989	220,728	18,088	238,816	8,456	230,361
1990	229,375	18,759	248,135	8,784	239,351
1991	223,040	18,378	241,418	8,919	232,499
1992	227,862	18,820	246,682	8,840	237,842
1993	227,431	18,674	246,105	9,821	236,284
1994	229,448	18,681	248,129	10,469	237,660
1995	230,323	18,857	249,180	10,536	238,644
1996	238,108	19,392	257,499	10,912	246,587
1997	246,140	20,034	266,174	11,172	255,002
1998	243,657	19,930	263,587	10,702	252,884
1999	252,552	20,597	273,149	10,529	262,620
2000	265,021	21,629	286,650	9,998	276,652
2001	250,241	20,488	270,729	9,307	261,422
2002	257,914	20,990	278,904	10,616	268,288
2003	263,468	21,390	284,858	11,133	273,725
2004	270,927	22,000	292,927	10,996	281,930
2006	279,886	22,729	302,614	11,389	291,226
2007	283,399	23,005	306,404	11,585	294,819
2008	286,813	23,276	310,088	11,699	298,389
2009	290,230	23,544	313,774	11,827	301,947
2010	293,715	23,824	317,539	11,952	305,587
2011	297,355	24,116	321,471	12,083	309,388
2012	300,885	24,394	325,279	12,203	313,076
2013	304,400	24,675	329,075	12,330	316,746
2014	307,538	24,919	332,457	12,442	320,014
2015	310,588	25,157	335,744	12,549	323,195
2016	313,397	25,379	338,776	12,633	326,143

Annual Growth Rates (%)

1980-1990	3.2	2.6	3.1	25.3	2.8
1990-2000	1.5	1.4	1.5	1.3	1.5
2000-2001	-5.6	-5.3	-5.6	-6.9	-5.5
2000-2004	0.6	0.4	0.5	2.4	0.5
2008-2016	1.1	1.1	1.1	1.0	1.1
2004-2016	1.2	1.2	1.2	1.2	1.2

Form 1.4 - Statewide
Noncoincident Peak Demand (MW)

	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	32,836	2,909	35,745	154	35,590	58.2
1981	34,460	3,045	37,504	157	37,347	58.1
1982	32,164	2,834	34,998	207	34,791	60.8
1983	33,935	2,987	36,922	360	36,563	58.3
1984	37,657	3,308	40,964	413	40,552	56.3
1985	37,610	3,299	40,909	483	40,426	58.5
1986	36,705	3,197	39,902	645	39,257	60.1
1987	37,693	3,265	40,958	918	40,040	61.4
1988	41,656	3,584	45,240	1,287	43,953	58.2
1989	40,674	3,475	44,149	1,420	42,729	61.5
1990	44,941	3,841	48,782	1,475	47,307	57.8
1991	43,066	3,688	46,753	1,497	45,256	58.6
1992	45,057	3,850	48,907	1,484	47,423	57.3
1993	43,259	3,691	46,950	1,649	45,301	59.5
1994	45,493	3,863	49,356	1,758	47,599	57.0
1995	45,802	3,904	49,706	1,769	47,938	56.8
1996	47,937	4,087	52,024	1,832	50,192	56.1
1997	50,149	4,282	54,431	1,876	52,556	55.4
1998	52,001	4,459	56,459	1,797	54,663	52.8
1999	50,903	4,362	55,265	1,768	53,497	56.0
2000	51,245	4,394	55,640	1,678	53,961	58.5
2001	47,716	4,088	51,805	1,562	50,242	59.4
2002	51,000	4,362	55,362	1,782	53,580	57.2
2003	52,400	4,465	56,865	1,869	54,996	56.8
2004	53,424	4,548	57,972	1,846	56,126	57.3
2006	56,555	4,822	61,377	1,912	59,466	55.9
2007	57,318	4,886	62,205	1,945	60,260	55.8
2008	58,057	4,949	63,006	1,964	61,042	55.8
2009	58,813	5,013	63,826	1,986	61,841	55.7
2010	59,572	5,079	64,651	2,006	62,644	55.7
2011	60,374	5,148	65,521	2,028	63,493	55.6
2012	61,152	5,214	66,366	2,049	64,317	55.6
2013	61,932	5,281	67,214	2,070	65,144	55.5
2014	62,651	5,342	67,993	2,089	65,905	55.4
2015	63,369	5,404	68,772	2,107	66,666	55.3
2016	64,038	5,461	69,500	2,121	67,379	55.3

Annual Growth Rates (%)					
1980-1990	3.2	2.8	3.2	25.3	2.9
1990-2000	1.3	1.4	1.3	1.3	1.3
2000-2001	-6.9	-7.0	-6.9	-6.9	-6.9
2000-2004	1.0	0.9	1.0	2.4	1.0
2004-2008	2.1	2.1	2.1	1.6	2.1
2008-2016	1.2	1.2	1.2	1.0	1.2
2004-2016	1.5	1.5	1.5	1.2	1.5

Form 1.5a
Statewide Net Energy for Load by Load Serving Entity (GWh)
Base Case

	2000	2001	2002	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average Annual Growth 2004-2009	Average Annual Growth 2004-2016
PG&E North	85,172	80,009	81,693	82,637	84,310	87,127	88,397	89,510	90,625	91,917	93,304	94,483	95,783	96,756	97,748	98,726	1.5%	1.3%
PG&E Bundled Customers	69,082	69,036	65,295	66,221	67,696	70,144	71,253	72,230	73,216	74,347	75,559	76,595	77,734	78,606	79,508	80,399	1.6%	1.4%
PG&E Direct Access	9,202	4,143	9,002	9,284	10,000	10,170	10,238	10,298	10,351	10,420	10,493	10,558	10,627	10,669	10,695	10,719	0.7%	0.6%
Northern California Power Agency	2,369	2,333	2,368	2,352	2,499	2,588	2,622	2,651	2,681	2,716	2,756	2,788	2,824	2,851	2,879	2,908	1.4%	1.3%
Silicon Valley Power	2,840	2,763	2,650	2,596	2,639	2,741	2,782	2,823	2,857	2,901	2,948	2,994	3,041	3,074	3,091	3,106	1.6%	1.4%
Other Publicly Owned Utilities	1,680	1,735	2,379	2,184	1,476	1,485	1,503	1,509	1,521	1,533	1,548	1,549	1,557	1,557	1,574	1,594	0.6%	0.6%
PG&E San Francisco	5,644	5,828	5,266	5,010	5,082	5,205	5,255	5,299	5,349	5,394	5,480	5,553	5,634	5,698	5,766	5,833	1.0%	1.2%
Dept of Water Resources - North	902	1,048	1,350	1,463	1,697	1,697	1,697	1,697	1,697	1,697	1,697	1,697	1,697	1,697	1,697	1,697	0.0%	0.0%
Total North of Path 15	91,719	86,885	88,309	89,110	91,089	94,028	95,348	96,506	97,671	99,007	100,480	101,733	103,114	104,151	105,210	106,256	1.4%	1.3%
Path 26 Pacific Gas & Electric - South	6,423	6,138	5,989	6,113	6,043	6,372	6,449	6,535	6,615	6,709	6,814	6,919	7,024	7,120	7,195	7,269	1.8%	1.6%
Path 26 - Dept of Water Resources	1,491	1,731	2,231	2,417	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	0.0%	0.0%
Total Zone Path 26	7,913	7,870	8,219	8,530	8,847	9,176	9,253	9,339	9,418	9,512	9,618	9,723	9,828	9,924	9,999	10,072	1.3%	1.1%
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Southern California Edison Planning Area	101,001	93,179	94,466	96,038	98,892	102,360	103,658	105,011	106,407	107,692	108,977	110,390	111,638	112,924	114,154	115,180	1.5%	1.3%
SCE Bundled Customers	81,667	79,934	73,115	75,419	78,064	81,078	82,205	83,377	84,589	85,703	86,822	88,045	89,132	90,258	91,342	92,254	1.6%	1.4%
SCE Direct Access	9,937	3,893	11,962	12,358	12,186	12,352	12,406	12,462	12,519	12,571	12,622	12,682	12,731	12,778	12,817	12,843	0.5%	0.4%
Anaheim Public Utilities Dept.	2,790	2,692	2,772	2,678	2,783	2,875	2,910	2,944	2,979	3,010	3,041	3,076	3,106	3,138	3,168	3,191	1.4%	1.1%
Riverside Utilities Dept	1,820	1,828	1,776	1,844	1,915	1,990	2,020	2,047	2,076	2,101	2,126	2,155	2,179	2,206	2,233	2,255	1.6%	1.4%
Vernon Municipal Light Dept	1,269	1,210	1,200	1,236	1,271	1,306	1,312	1,322	1,330	1,340	1,348	1,359	1,369	1,376	1,380	1,382	0.9%	0.7%
Metropolitan Water District	2,528	2,653	2,637	1,455	1,611	1,656	1,686	1,725	1,764	1,804	1,840	1,879	1,914	1,948	1,980	2,008	1.8%	1.9%
Other Publicly Owned Utilities	989	970	1,005	1,048	1,062	1,103	1,118	1,134	1,149	1,164	1,178	1,193	1,207	1,221	1,234	1,246	1.6%	1.3%
Pasadena Water and Power Dept	1,246	1,193	1,234	1,266	1,290	1,292	1,286	1,280	1,277	1,271	1,264	1,258	1,252	1,246	1,239	1,233	-0.2%	-0.4%
San Diego Gas & Electric	20,270	18,701	19,007	19,689	20,670	21,401	21,721	22,116	22,457	22,786	23,110	23,436	23,758	24,075	24,379	24,679	1.7%	1.5%
SDG&E Bundled Customers	14,382	16,063	15,315	16,112	16,985	17,661	17,954	18,314	18,627	18,930	19,228	19,529	19,825	20,117	20,400	20,679	1.9%	1.7%
SDG&E Direct Access	5,888	2,638	3,692	3,577	3,685	3,740	3,768	3,802	3,829	3,856	3,882	3,908	3,933	3,957	3,979	4,000	0.8%	0.7%
Dept of Water Resources - South	3,306	3,839	4,947	5,361	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564	0.0%	0.0%
Total South of Path 15	125,822	116,913	119,655	122,353	126,415	130,617	132,229	133,971	135,704	137,312	138,915	140,647	142,212	143,808	145,335	146,655	1.4%	1.2%
Sacramento Municipal Utilities District	10,098	9,651	9,984	10,559	10,800	11,391	11,629	11,893	12,164	12,436	12,737	13,053	13,370	13,693	13,998	14,295	2.4%	2.4%
WAPA/Roseville/Redding	5,010	4,745	5,264	5,394	5,765	5,843	5,943	6,014	6,090	6,176	6,266	6,328	6,406	6,449	6,514	6,580	1.1%	1.1%
Modesto Irrigation District	2,284	2,203	2,545	2,577	2,640	2,747	2,790	2,831	2,869	2,913	2,961	3,007	3,055	3,092	3,121	3,149	1.7%	1.5%
Total SMUD Control Area	17,392	16,599	17,793	18,531	19,204	19,981	20,361	20,738	21,123	21,525	21,964	22,388	22,831	23,233	23,633	24,023	1.9%	1.9%
Los Angeles Department of Water and Power	25,136	24,293	25,300	26,155	26,811	27,622	27,727	27,849	27,952	28,057	28,139	28,227	28,303	28,362	28,396	28,429	0.8%	0.5%
Burbank Public Service Dept	1,137	1,129	1,144	1,069	1,089	1,090	1,085	1,081	1,078	1,073	1,067	1,062	1,057	1,051	1,046	1,040	-0.2%	-0.4%
Glendale Public Service Dept	1,169	1,188	1,101	1,167	1,189	1,191	1,185	1,180	1,177	1,172	1,166	1,160	1,154	1,148	1,142	1,136	-0.2%	-0.4%
Total LADWP Control Area	27,442	26,610	27,545	28,390	29,089	29,903	29,998	30,110	30,208	30,302	30,371	30,448	30,514	30,562	30,583	30,606	0.8%	0.4%
Imperial Irrigation District	2,841	3,078	3,185	3,182	3,364	3,480	3,533	3,578	3,624	3,675	3,726	3,772	3,823	3,866	3,916	3,966	1.5%	1.4%
Turlock Irrigation District	1,584	1,579	1,627	1,740	1,937	2,000	2,033	2,063	2,091	2,124	2,159	2,191	2,225	2,251	2,275	2,298	1.5%	1.4%
Far North & East Sierra	1,938	1,888	1,955	1,888	1,986	2,040	2,064	2,084	2,106	2,129	2,153	2,175	2,199	2,220	2,243	2,267	1.2%	1.1%
Total Other Control Areas	6,363	6,544	6,768	6,810	7,287	7,521	7,630	7,725	7,822	7,928	8,039	8,137	8,247	8,337	8,434	8,531	1.4%	1.3%
Total CAISO	225,455	211,669	216,183	219,994	226,350	233,821	236,830	239,816	242,794	245,832	249,013	252,103	255,154	257,882	260,545	262,983	1.4%	1.3%
Total State	276,652	261,422	268,288	273,725	281,930	291,226	294,819	298,389	301,947	305,587	309,388	313,076	316,746	320,014	323,195	326,143	1.4%	1.2%

Form 1.5b
Statewide 1 in 2 Electric Peak Demand by Load Serving Entity (MW)
Base Case

	2000	2001	2002	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average Annual Growth 2004-2009	2004-2016
PG&E North	16,674	15,535	16,511	16,229	16,277	17,248	17,503	17,725	17,954	18,215	18,505	18,750	19,023	19,235	19,464	19,693	2.0%	1.6%
PG&E Bundled Customers	15,025	13,792	13,932	13,849	13,890	14,688	14,915	15,114	15,319	15,552	15,811	16,030	16,273	16,465	16,677	16,888	2.0%	1.6%
PG&E Direct Access	511	581	1,277	1,236	1,247	1,327	1,337	1,346	1,353	1,363	1,374	1,384	1,394	1,402	1,406	1,411	1.7%	1.0%
Northern California Power Agency	467	468	489	460	470	510	517	523	529	536	544	551	558	564	570	577	2.4%	1.7%
Silicon Valley Power	415	402	402	349	350	380	386	392	397	404	410	417	424	429	432	434	2.6%	1.8%
Other Publicly Owned Utilities	257	292	412	335	321	343	348	351	355	360	365	368	373	376	379	382	2.0%	1.5%
PG&E San Francisco	948	979	885	842	854	874	883	890	899	906	921	933	947	957	969	980	1.0%	1.2%
Dept of Water Resources - North	82	95	123	133	154	154	154	154	154	154	154	154	154	154	154	154	0.0%	0.0%
Total North of Path 15	17,705	16,610	17,519	17,204	17,285	18,277	18,540	18,770	19,007	19,275	19,580	19,838	20,124	20,346	20,587	20,827	1.9%	1.6%
					17,636	18,643	18,914											
Path 26 Pacific Gas & Electric - South	1,708	1,599	1,620	1,638	1,646	1,754	1,779	1,803	1,826	1,853	1,882	1,909	1,937	1,961	1,985	2,009	2.1%	1.7%
Path 26 - Dept of Water Resources	136	157	203	220	255	255	255	255	255	255	255	255	255	255	255	255	0.0%	0.0%
Total Zone Path 26	1,844	1,757	1,823	1,858	1,901	2,009	2,034	2,057	2,081	2,107	2,137	2,164	2,192	2,216	2,240	2,264	1.8%	1.5%
Southern California Edison Planning Are	19,465	17,868	18,611	19,907	20,546	21,844	22,163	22,483	22,820	23,128	23,432	23,762	24,059	24,372	24,673	24,934	2.1%	1.6%
SCE Bundled Customers	17,563	16,009	15,313	16,521	17,318	18,456	18,745	19,033	19,335	19,612	19,888	20,184	20,452	20,733	21,005	21,243	2.2%	1.7%
SCE Direct Access	558	596	1,930	2,047	1,873	1,965	1,975	1,986	1,998	2,009	2,019	2,031	2,041	2,053	2,063	2,070	1.3%	0.8%
Anaheim Public Utilities Dept.	425	397	432	436	444	473	480	486	492	498	503	510	515	521	527	531	2.1%	1.5%
Riverside Utilities Dept	339	340	338	357	374	399	406	411	418	423	429	435	440	445	451	456	2.2%	1.7%
Vernon Municipal Light Dept	138	121	143	158	154	164	166	167	169	171	172	174	176	178	179	180	1.9%	1.3%
Metropolitan Water District	286	253	292	215	205	197	200	205	209	214	218	223	227	231	234	237	0.4%	1.2%
Other Publicly Owned Utilities	156	151	162	173	178	190	192	195	198	201	203	206	209	211	214	216	2.2%	1.6%
Pasadena Water and Power Dept	274	244	275	280	294	296	295	294	293	292	290	289	288	287	285	284	-0.1%	-0.3%
San Diego Gas & Electric	3,404	3,223	3,714	3,915	4,121	4,307	4,371	4,451	4,520	4,586	4,652	4,718	4,784	4,848	4,909	4,970	1.9%	1.6%
SDG&E Bundled Customers	3,177	2,875	3,168	3,351	3,543	3,720	3,781	3,856	3,921	3,984	4,046	4,109	4,171	4,232	4,290	4,348	2.0%	1.7%
SDG&E Direct Access	227	348	546	564	578	587	590	595	599	603	606	610	613	616	619	622	0.7%	0.6%
Dept of Water Resources - South	302	349	450	487	506	506	506	506	506	506	506	506	506	506	506	506	0.0%	0.0%
Total South of Path 15	23,445	21,684	23,050	24,590	25,467	26,953	27,336	27,734	28,139	28,511	28,880	29,275	29,636	30,013	30,374	30,694	2.0%	1.6%
Sacramento Municipal Utilities District	2,693	2,489	2,784	2,814	2,764	2,995	3,062	3,136	3,213	3,291	3,380	3,473	3,567	3,663	3,757	3,844	3.1%	2.8%
WAPA/Roseville/Redding	584	566	744	666	698	746	758	766	776	787	799	808	819	827	836	846	2.1%	1.6%
Modesto Irrigation District	461	444	509	504	482	525	533	541	548	557	566	575	584	592	599	605	2.6%	1.9%
Total SMUD Control Area	3,738	3,498	4,036	3,983	3,944	4,267	4,352	4,443	4,537	4,635	4,745	4,856	4,971	5,081	5,192	5,295	2.8%	2.5%
Los Angeles Department of Water and F	5,330	4,803	5,136	5,378	5,419	5,779	5,797	5,819	5,839	5,858	5,872	5,888	5,903	5,914	5,920	5,927	1.5%	0.8%
Burbank Public Service Dept	270	245	269	268	285	288	287	286	285	284	282	281	280	279	277	276	0.0%	-0.2%
Glendale Public Service Dept	282	245	291	286	305	304	303	301	301	299	298	296	295	294	293	291	-0.3%	-0.4%
Total LADWP Control Area	5,882	5,293	5,696	5,933	6,008	6,371	6,387	6,406	6,425	6,441	6,452	6,466	6,478	6,487	6,490	6,495	1.4%	0.7%
Imperial Irrigation District	738	780	807	796	840	869	882	893	905	918	931	942	955	965	978	990	1.5%	1.4%
Turlock Irrigation District	322	334	353	341	374	404	411	417	423	429	437	443	450	456	462	468	2.5%	1.9%
Far North & East Sierra	287	286	296	292	308	315	319	321	324	328	331	334	337	340	344	347	1.1%	1.0%
Total Other Control Areas	1,347	1,400	1,456	1,429	1,522	1,589	1,612	1,632	1,652	1,674	1,698	1,719	1,742	1,762	1,783	1,805	1.7%	1.4%
Total CAISO	42,994	40,051	42,392	43,651	44,653	47,239	47,909	48,561	49,226	49,894	50,597	51,276	51,953	52,575	53,201	53,784	2.0%	1.6%
Total State	53,961	50,242	53,580	54,996	56,126	59,466	60,260	61,042	61,841	62,644	63,493	64,317	65,144	65,905	66,666	67,379	2.0%	1.5%
	80%	80%																
Coincident Demand																		
Total CAISO Coincident Demand	41,964	39,092	41,376	42,606	43,583	46,108	46,762	47,399	48,048	48,700	49,385	50,049	50,709	51,316	51,927	52,496	2.0%	1.6%
Total Statewide Coincident Demand	52,669	49,039	52,297	53,679	54,782	58,041	58,817	59,580	60,360	61,144	61,972	62,777	63,584	64,326	65,069	65,765	2.0%	1.5%

Form 1.5c
Statewide 1 in 10 Electric Peak Demand by Load Serving Entity (MW)
Base Case

Noncoincident Demand	2000	2001	2002	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
PG&E North	16,674	15,535	16,511	16,229	16,277	17,761	18,017	18,242	18,471	18,736	19,031	19,281	19,559	19,773	20,006	20,237
PG&E San Francisco	948	979	885	842	854	904	912	920	929	937	951	964	978	989	1,000	1,012
Dept of Water Resources - North	82	95	123	133	154	154	154	154	154	154	154	154	154	154	154	154
Total North of Path 15	**17,705**	**16,610**	**17,519**	**17,204**	**17,285**	**18,819**	**19,084**	**19,316**	**19,554**	**19,826**	**20,137**	**20,399**	**20,691**	**20,916**	**21,161**	**21,403**
Path 26 Pacific Gas & Electric - South	1,708	1,599	1,620	1,638	1,646	1,805	1,830	1,854	1,878	1,905	1,935	1,962	1,991	2,015	2,039	2,063
Path 26 - Dept of Water Resources	136	157	203	220	255	255	255	255	255	255	255	255	255	255	255	255
Total Path 26	**1,844**	**1,757**	**1,823**	**1,858**	**1,901**	**2,060**	**2,085**	**2,109**	**2,133**	**2,159**	**2,190**	**2,217**	**2,246**	**2,270**	**2,294**	**2,318**
Southern California Edison Planning Area	19,859	17,868	18,594	19,879	20,297	23,241	23,563	23,889	24,231	24,544	24,856	25,194	25,499	25,819	26,137	26,414
Pasadena Water and Power Dept	274	244	275	280	294	315	314	312	311	310	308	307	305	304	302	301
San Diego Gas & Electric Planning Area	3,404	3,223	3,714	3,915	4,121	4,836	4,906	4,994	5,068	5,142	5,214	5,287	5,360	5,431	5,502	5,571
Dept of Water Resources - South	302	349	450	487	506	506	506	506	506	506	506	506	506	506	506	506
South of Path 15	**23,838**	**21,684**	**23,033**	**24,561**	**25,218**	**28,898**	**29,288**	**29,701**	**30,117**	**30,501**	**30,883**	**31,294**	**31,670**	**32,060**	**32,447**	**32,792**
Sacramento Municipal Utilities District	2,693	2,489	2,784	2,814	2,764	3,242	3,306	3,392	3,468	3,538	3,623	3,710	3,798	3,885	3,966	4,066
WAPA/Roseville/Redding	584	566	744	666	698	769	781	789	799	810	823	832	843	851	860	870
Modesto Irrigation District	461	444	509	504	482	540	549	557	564	573	582	591	601	609	616	622
Total SMUD Control Area	**3,738**	**3,498**	**4,036**	**3,983**	**3,944**	**4,552**	**4,636**	**4,738**	**4,831**	**4,921**	**5,028**	**5,134**	**5,243**	**5,344**	**5,442**	**5,559**
Los Angeles Department of Water and Power	5,330	4,803	5,136	5,378	5,419	6,119	6,124	6,135	6,144	6,152	6,156	6,163	6,168	6,169	6,167	6,166
Burbank Public Service Dept	270	245	269	268	285	307	305	304	303	301	300	298	297	295	294	293
Glendale Public Service Dept	282	245	291	286	305	323	322	320	319	318	316	314	313	312	310	309
Total LADWP Control Area	**5,882**	**5,293**	**5,696**	**5,933**	**6,008**	**6,749**	**6,751**	**6,759**	**6,767**	**6,771**	**6,772**	**6,775**	**6,777**	**6,776**	**6,772**	**6,768**
Imperial Irrigation District	738	780	807	796	840	979	994	1,006	1,018	1,032	1,046	1,059	1,073	1,084	1,098	1,111
Turlock Irrigation District	322	334	353	341	374	416	423	429	435	442	449	456	463	469	475	480
Far North & East Sierra	287	286	296	292	308	355	359	362	365	368	372	375	379	382	386	389
Total Other	**1,347**	**1,400**	**1,456**	**1,429**	**1,522**	**1,751**	**1,775**	**1,796**	**1,818**	**1,842**	**1,867**	**1,890**	**1,915**	**1,935**	**1,958**	**1,981**
Total ISO Noncoincident Demand	**43,388**	**40,051**	**42,375**	**43,623**	**44,404**	**49,777**	**50,457**	**51,126**	**51,803**	**52,487**	**53,210**	**53,910**	**54,607**	**55,246**	**55,902**	**56,513**
Total State	**54,355**	**50,242**	**53,563**	**54,968**	**55,878**	**62,828**	**63,619**	**64,420**	**65,219**	**66,021**	**66,877**	**67,708**	**68,541**	**69,300**	**70,074**	**70,821**
Coincident Demand																
Total ISO Coincident Demand	42,349	39,092	41,360	42,578	43,341	48,585	49,249	49,902	50,563	51,230	51,936	52,619	53,299	53,923	54,563	55,160
Total Statewide Coincident Demand	53,053	49,039	52,280	53,651	54,539	61,324	62,096	62,877	63,657	64,440	65,276	66,087	66,900	67,641	68,396	69,125

Form 1.5d
Statewide Net Energy for Load by Load Serving Entity (GWh)
Low Case

																	Average Annual Growth	
	2000	2001	2002	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2004-2009	2004-2016
PG&E North	85,172	80,009	81,693	82,637	84,310	86,868	88,107	89,197	90,284	91,552	92,922	94,084	95,367	96,322	97,296	98,253	1.4%	1.3%
PG&E Bundled Customers	69,082	69,036	65,295	66,221	67,696	69,903	70,983	71,940	72,900	74,009	75,206	76,226	77,350	78,206	79,091	79,964	1.5%	1.4%
PG&E Direct Access	9,202	4,143	9,002	9,284	10,000	10,168	10,234	10,294	10,346	10,415	10,488	10,552	10,620	10,662	10,688	10,711	0.7%	0.6%
Northern California Power Agency	2,369	2,333	2,368	2,352	2,499	2,580	2,613	2,641	2,671	2,705	2,744	2,776	2,811	2,838	2,866	2,894	1.3%	1.2%
Silicon Valley Power	2,840	2,763	2,650	2,596	2,639	2,738	2,778	2,819	2,853	2,897	2,943	2,989	3,036	3,068	3,085	3,100	1.6%	1.3%
Other Publicly Owned Utilities	1,680	1,735	2,379	2,184	1,476	1,480	1,498	1,503	1,514	1,526	1,541	1,541	1,549	1,549	1,566	1,585	0.5%	0.6%
PG&E San Francisco	5,644	5,828	5,266	5,010	5,082	5,205	5,255	5,299	5,349	5,394	5,479	5,552	5,632	5,694	5,761	5,828	1.0%	1.1%
Dept of Water Resources - North	902	1,048	1,350	1,463	1,697	1,697	1,697	1,697	1,697	1,697	1,697	1,697	1,697	1,697	1,697	1,697	0.0%	0.0%
Total North of Path 15	91,719	86,885	88,309	89,110	91,089	93,769	95,058	96,193	97,330	98,643	100,098	101,332	102,696	103,713	104,754	105,777	1.3%	1.3%
Path 26 Pacific Gas & Electric - South	6,423	6,138	5,989	6,113	6,043	6,342	6,416	6,500	6,576	6,668	6,771	6,875	6,978	7,072	7,146	7,217	1.7%	1.5%
Path 26 - Dept of Water Resources	1,491	1,731	2,231	2,417	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	0.0%	0.0%
Total Zone Path 26	7,913	7,870	8,219	8,530	8,847	9,146	9,220	9,303	9,380	9,472	9,575	9,678	9,782	9,876	9,949	10,020	1.2%	1.0%
Southern California Edison Planning Area	101,001	93,179	94,466	96,038	98,892	101,918	103,149	104,447	105,780	107,011	108,249	109,613	110,818	112,054	113,272	114,291	1.4%	1.2%
SCE Bundled Customers	81,667	79,934	73,115	75,419	78,064	80,663	81,729	82,850	84,003	85,067	86,141	87,319	88,365	89,444	90,516	91,423	1.5%	1.3%
SCE Direct Access	9,937	3,893	11,962	12,358	12,186	12,348	12,401	12,456	12,512	12,564	12,614	12,673	12,722	12,769	12,808	12,834	0.5%	0.4%
Anaheim Public Utilities Dept.	2,790	2,692	2,772	2,678	2,783	2,867	2,901	2,933	2,967	2,997	3,027	3,061	3,090	3,121	3,151	3,174	1.3%	1.1%
Riverside Utilities Dept	1,820	1,828	1,776	1,844	1,915	1,980	2,008	2,034	2,062	2,085	2,110	2,137	2,160	2,186	2,213	2,235	1.5%	1.3%
Vernon Municipal Light Dept	1,269	1,210	1,200	1,236	1,271	1,305	1,312	1,322	1,329	1,339	1,347	1,358	1,368	1,375	1,379	1,380	0.9%	0.7%
Metropolitan Water District	2,528	2,653	2,637	1,455	1,611	1,656	1,686	1,725	1,764	1,804	1,840	1,879	1,914	1,948	1,980	2,008	1.8%	1.9%
Other Publicly Owned Utilities	989	970	1,005	1,048	1,062	1,098	1,113	1,127	1,142	1,156	1,169	1,184	1,198	1,211	1,225	1,237	1.5%	1.3%
Pasadena Water and Power Dept	1,246	1,193	1,234	1,266	1,290	1,288	1,281	1,275	1,271	1,264	1,257	1,251	1,244	1,238	1,231	1,225	-0.3%	-0.4%
San Diego Gas & Electric	20,270	18,701	19,007	19,689	20,670	21,278	21,587	21,972	22,301	22,622	22,940	23,259	23,576	23,886	24,197	24,501	1.5%	1.4%
SDG&E Bundled Customers	14,382	16,063	15,315	16,112	16,985	17,538	17,819	18,169	18,472	18,765	19,057	19,351	19,642	19,928	20,217	20,500	1.7%	1.6%
SDG&E Direct Access	5,888	2,638	3,692	3,577	3,685	3,740	3,768	3,803	3,830	3,857	3,883	3,908	3,934	3,958	3,980	4,001	0.8%	0.7%
Dept of Water Resources - South	3,306	3,839	4,947	5,361	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564	0.0%	0.0%
Total South of Path 15	125,822	116,913	119,655	122,353	126,415	130,047	131,581	133,257	134,916	136,461	138,009	139,686	141,202	142,742	144,264	145,580	1.3%	1.2%
Sacramento Municipal Utilities District	10,098	9,651	9,984	10,559	10,800	11,193	11,399	11,686	11,926	12,138	12,390	12,651	12,910	13,162	13,391	13,717	2.0%	2.0%
WAPA/Roseville/Redding	5,010	4,745	5,264	5,394	5,765	5,836	5,934	6,004	6,080	6,165	6,254	6,315	6,392	6,434	6,499	6,564	1.1%	1.1%
Modesto Irrigation District	2,284	2,203	2,545	2,577	2,640	2,739	2,781	2,822	2,859	2,903	2,950	2,996	3,043	3,080	3,108	3,135	1.6%	1.4%
Total SMUD Control Area	17,392	16,599	17,793	18,531	19,204	19,768	20,115	20,512	20,865	21,206	21,595	21,962	22,345	22,676	22,999	23,416	1.7%	1.7%
Los Angeles Department of Water and Power	25,136	24,293	25,300	26,155	26,811	27,417	27,463	27,532	27,584	27,638	27,671	27,713	27,746	27,759	27,759	27,757	0.6%	0.3%
Burbank Public Service Dept	1,137	1,129	1,144	1,069	1,089	1,087	1,081	1,076	1,073	1,067	1,061	1,056	1,050	1,045	1,039	1,034	-0.3%	-0.4%
Glendale Public Service Dept	1,169	1,188	1,101	1,167	1,189	1,187	1,181	1,175	1,172	1,166	1,159	1,153	1,147	1,141	1,135	1,129	-0.3%	-0.4%
Total LADWP Control Area	27,442	26,610	27,545	28,390	29,089	29,690	29,724	29,783	29,828	29,871	29,892	29,922	29,943	29,944	29,933	29,919	0.5%	0.2%
Imperial Irrigation District	2,841	3,078	3,185	3,182	3,364	3,480	3,533	3,578	3,624	3,675	3,726	3,772	3,823	3,866	3,916	3,966	1.5%	1.4%
Turlock Irrigation District	1,584	1,579	1,627	1,740	1,937	1,994	2,026	2,056	2,084	2,116	2,151	2,182	2,216	2,242	2,265	2,288	1.5%	1.4%
Far North & East Sierra	1,938	1,888	1,955	1,888	1,986	2,332	2,358	2,379	2,401	2,426	2,453	2,475	2,501	2,521	2,546	2,572	3.9%	2.2%
Total Other Control Areas	6,363	6,544	6,768	6,810	7,287	7,807	7,917	8,013	8,110	8,217	8,330	8,429	8,540	8,629	8,727	8,826	2.2%	1.6%
Total CAISO	235,553	221,319	226,167	230,553	237,150	244,155	247,258	250,439	253,552	256,714	260,072	263,348	266,590	269,493	272,358	275,094	1.3%	1.2%
Total State	286,750	271,072	278,272	284,284	292,730	301,421	305,015	308,747	312,354	316,008	319,888	323,660	327,417	330,743	334,017	337,254	1.3%	1.2%

Form 1.5e
Statewide 1 in 2 Electric Peak Demand by Load Serving Entity (MW)
Low Case

	1999	2000	2001	2002	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average Annual Growth 2004-2009	Average Annual Growth 2004-2016
PG&E North	16,357	16,674	15,535	16,511	16,244	16,217	17,105	17,351	17,568	17,788	18,043	18,328	18,568	18,836	19,042	19,266	19,488	1.9%	1.5%
PG&E Bundled Customers	14,721	15,025	13,792	13,932	13,891	13,722	14,401	14,620	14,811	15,008	15,234	15,487	15,699	15,936	16,121	16,326	16,531	1.8%	1.6%
PG&E Direct Access	454	511	581	1,277	1,222	1,303	1,402	1,412	1,421	1,430	1,440	1,451	1,461	1,472	1,480	1,485	1,490	1.9%	1.1%
Northern California Power Agency	530	467	468	489	455	491	537	544	550	557	564	573	579	587	593	600	606	2.5%	1.8%
Silicon Valley Power	389	415	402	402	345	366	402	408	414	419	426	433	440	447	453	456	458	2.8%	1.9%
Other Publicly Owned Utilities	262	257	292	412	331	336	362	367	371	375	379	385	389	393	396	399	403	2.2%	1.5%
PG&E San Francisco	921	948	979	885	842	854	874	883	890	899	906	921	933	946	957	968	979	1.0%	1.1%
Dept of Water Resources - North	82	82	95	123	133	154	154	154	154	154	154	154	154	154	154	154	154	0.0%	0.0%
Total North of Path 15	17,361	17,705	16,610	17,519	17,219	17,225	18,133	18,388	18,612	18,841	19,104	19,403	19,655	19,936	20,153	20,388	20,622	1.8%	1.5%
Path 26 Pacific Gas & Electric - South	1,655	1,708	1,599	1,620	1,409	1,389	1,475	1,495	1,516	1,535	1,557	1,582	1,606	1,630	1,653	1,673	1,693	2.0%	1.7%
Path 26 - Dept of Water Resources	136	136	157	203	220	255	255	255	255	255	255	255	255	255	255	255	255	0.0%	0.0%
Total Zone Path 26	1,791	1,844	1,757	1,823	1,629	1,643	1,730	1,750	1,770	1,790	1,812	1,837	1,861	1,885	1,907	1,928	1,947	1.7%	1.4%
Southern California Edison Planning Area	19,056	19,859	17,868	18,594	19,879	20,297	21,722	22,023	22,328	22,647	22,940	23,231	23,547	23,832	24,131	24,429	24,688	2.2%	1.6%
SCE Bundled Customers	17,033	17,918	16,009	15,299	16,497	17,108	18,340	18,612	18,886	19,171	19,434	19,697	19,981	20,237	20,504	20,773	21,009	2.3%	1.7%
SCE Direct Access	588	570	596	1,929	2,044	1,851	1,964	1,974	1,984	1,997	2,007	2,017	2,028	2,039	2,051	2,061	2,068	1.5%	0.9%
Anaheim Public Utilities Dept.	449	433	397	432	435	438	471	478	483	490	495	501	507	512	518	523	528	2.2%	1.6%
Riverside Utilities Dept	341	346	340	338	356	370	397	403	409	414	420	425	430	435	441	446	451	2.3%	1.7%
Vernon Municipal Light Dept	158	141	121	143	158	152	164	165	167	169	170	172	174	176	177	179	180	2.1%	1.4%
Metropolitan Water District	331	292	253	291	214	202	197	200	205	209	214	218	223	227	231	234	237	0.7%	1.3%
Other Publicly Owned Utilities	157	159	151	162	173	176	189	191	194	197	199	202	204	207	209	212	214	2.3%	1.7%
Pasadena Water and Power Dept	285	274	244	275	280	294	295	294	293	292	290	289	287	286	285	283	282	-0.2%	-0.3%
San Diego Gas & Electric	3,591	3,404	3,223	3,714	3,915	4,121	4,282	4,344	4,422	4,488	4,553	4,617	4,682	4,746	4,809	4,872	4,933	1.7%	1.5%
SDG&E Bundled Customers	3,361	3,177	2,875	3,168	3,351	3,543	3,695	3,754	3,826	3,889	3,950	4,011	4,072	4,133	4,193	4,253	4,311	1.9%	1.6%
SDG&E Direct Access	230	227	348	546	564	578	587	590	595	599	603	606	610	613	616	619	622	0.7%	0.6%
Dept of Water Resources - South	302	302	349	450	487	506	506	506	506	506	506	506	506	506	506	506	506	0.0%	0.0%
Total South of Path 15	23,234	23,838	21,684	23,033	24,561	25,218	26,805	27,167	27,548	27,933	28,288	28,642	29,022	29,370	29,731	30,090	30,409	2.1%	1.6%
Sacramento Municipal Utilities District	2,764	2,693	2,489	2,784	2,814	2,764	2,946	3,004	3,082	3,151	3,215	3,292	3,371	3,451	3,530	3,604	3,695	2.7%	2.4%
WAPA/Roseville/Redding	630	584	566	744	889	976	1,044	1,060	1,072	1,085	1,100	1,117	1,129	1,143	1,152	1,165	1,178	2.1%	1.6%
Modesto Irrigation District	491	461	444	509	498	504	553	561	569	577	586	596	605	615	622	630	637	2.8%	2.0%
Total SMUD Control Area	3,884	3,738	3,498	4,036	4,201	4,244	4,543	4,626	4,723	4,813	4,901	5,004	5,105	5,209	5,304	5,399	5,510	2.6%	2.2%
Los Angeles Department of Water and Pc	5,389	5,330	4,803	5,136	5,378	5,419	5,734	5,738	5,748	5,757	5,765	5,768	5,774	5,779	5,780	5,778	5,777	1.2%	0.5%
Burbank Public Service Dept	270	270	245	269	268	285	287	286	285	284	282	281	279	278	277	276	274	-0.1%	-0.3%
Glendale Public Service Dept	286	282	245	291	286	305	303	302	300	299	298	296	295	293	292	291	289	-0.4%	-0.4%
Total LADWP Control Area	5,945	5,882	5,293	5,696	5,933	6,008	6,324	6,325	6,333	6,340	6,344	6,345	6,348	6,350	6,349	6,345	6,341	1.1%	0.5%
Imperial Irrigation District	700	738	780	807	796	840	869	882	893	905	917	930	941	954	965	977	989	1.5%	1.4%
Turlock Irrigation District	310	322	334	353	337	391	426	433	439	445	452	459	466	473	479	486	491	2.6%	1.9%
Far North & East Sierra	272	287	286	296	292	308	315	318	321	324	327	331	334	337	340	343	347	1.0%	1.0%
Total Other Control Areas	1,282	1,347	1,400	1,456	1,425	1,539	1,610	1,633	1,653	1,673	1,696	1,720	1,741	1,764	1,784	1,805	1,827	1.7%	1.4%
Total CAISO	42,385	43,388	40,051	42,375	43,409	44,087	46,668	47,305	47,930	48,564	49,204	49,882	50,538	51,192	51,791	52,406	52,978	2.0%	1.5%
Total State	53,497	54,355	50,242	53,563	54,968	55,878	59,145	59,889	60,640	61,390	62,145	62,951	63,732	64,515	65,228	65,955	66,656	1.9%	1.5%
Coincident Demand																			
Total CAISO Coincident Demand	41,370	42,349	39,092	41,360	42,369	43,031	45,551	46,172	46,783	47,401	48,026	48,687	49,328	49,966	50,551	51,151	51,709	2.0%	1.5%
Total Statewide Coincident Demand	52,216	53,053	49,039	52,280	53,651	54,539	57,729	58,455	59,188	59,920	60,657	61,443	62,206	62,970	63,666	64,375	65,060	1.9%	1.5%

Form 1.5f
Statewide 1 in 10 Electric Peak Demand by Load Serving Entity (MW)
Low Case

Noncoincident Demand	2000	2001	2002	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
PG&E North	16,674	15,535	16,511	16,229	16,277	17,825	18,088	18,318	18,554	18,824	19,124	19,377	19,659	19,878	20,115	20,351
PG&E San Francisco	948	979	885	842	854	904	912	920	929	937	952	964	978	989	1,001	1,013
Dept of Water Resources - North	82	95	123	133	154	154	154	154	154	154	154	154	154	154	154	154
Total North of Path 15	**17,705**	**16,610**	**17,519**	**17,204**	**17,285**	**18,883**	**19,155**	**19,393**	**19,637**	**19,915**	**20,230**	**20,496**	**20,792**	**21,022**	**21,271**	**21,518**
Path 26 Pacific Gas & Electric - South	1,708	1,599	1,620	1,638	1,646	1,812	1,838	1,863	1,887	1,915	1,945	1,973	2,002	2,027	2,052	2,076
Path 26 - Dept of Water Resources	136	157	203	220	255	255	255	255	255	255	255	255	255	255	255	255
Total Path 26	**1,844**	**1,757**	**1,823**	**1,858**	**1,901**	**2,067**	**2,093**	**2,118**	**2,142**	**2,169**	**2,200**	**2,228**	**2,257**	**2,282**	**2,306**	**2,331**
Southern California Edison Planning Area	19,465	17,868	18,611	19,907	20,546	23,372	23,713	24,056	24,416	24,745	25,071	25,424	25,742	26,077	26,399	26,678
Pasadena Water and Power Dept	274	244	275	280	294	316	315	314	313	311	310	308	307	306	304	303
San Diego Gas & Electric Planning Area	3,404	3,223	3,714	3,915	4,121	4,864	4,937	5,027	5,104	5,179	5,253	5,328	5,402	5,475	5,544	5,613
Dept of Water Resources - South	302	349	450	487	506	506	506	506	506	506	506	506	506	506	506	506
South of Path 15	**23,445**	**21,684**	**23,050**	**24,590**	**25,467**	**29,058**	**29,471**	**29,902**	**30,339**	**30,742**	**31,140**	**31,567**	**31,957**	**32,363**	**32,753**	**33,099**
Sacramento Municipal Utilities District	2,693	2,489	2,784	2,814	2,764	3,297	3,370	3,451	3,536	3,622	3,720	3,822	3,926	4,031	4,134	4,230
WAPA/Roseville/Redding	584	566	744	666	698	771	783	792	802	813	826	835	847	854	864	874
Modesto Irrigation District	461	444	509	504	482	542	551	559	567	575	585	594	604	612	619	626
Total SMUD Control Area	**3,738**	**3,498**	**4,036**	**3,983**	**3,944**	**4,610**	**4,703**	**4,802**	**4,905**	**5,010**	**5,131**	**5,252**	**5,377**	**5,497**	**5,617**	**5,730**
Los Angeles Department of Water and Power	5,330	4,803	5,136	5,378	5,419	6,168	6,187	6,210	6,232	6,252	6,267	6,284	6,300	6,312	6,318	6,326
Burbank Public Service Dept	270	245	269	268	285	308	306	305	304	303	301	300	299	297	296	295
Glendale Public Service Dept	282	245	291	286	305	324	323	322	321	319	318	316	315	314	312	311
Total LADWP Control Area	**5,882**	**5,293**	**5,696**	**5,933**	**6,008**	**6,800**	**6,816**	**6,837**	**6,857**	**6,874**	**6,887**	**6,901**	**6,913**	**6,923**	**6,927**	**6,932**
Imperial Irrigation District	738	780	807	796	840	930	944	956	968	982	996	1,008	1,021	1,033	1,046	1,060
Turlock Irrigation District	322	334	353	341	374	418	425	431	437	444	451	458	465	471	477	483
Far North & East Sierra	287	286	296	292	308	337	341	344	347	350	354	357	361	364	368	371
Total Other	**1,347**	**1,400**	**1,456**	**1,429**	**1,522**	**1,685**	**1,709**	**1,731**	**1,752**	**1,776**	**1,801**	**1,823**	**1,848**	**1,868**	**1,891**	**1,914**
Total ISO Noncoincident Demand	**42,994**	**40,051**	**42,392**	**43,651**	**44,653**	**50,008**	**50,719**	**51,412**	**52,118**	**52,826**	**53,570**	**54,290**	**55,006**	**55,667**	**56,331**	**56,949**
Total State	**53,961**	**50,242**	**53,580**	**54,996**	**56,126**	**63,104**	**63,948**	**64,782**	**65,632**	**66,487**	**67,388**	**68,266**	**69,144**	**69,955**	**70,765**	**71,524**
Coincident Demand																
Total ISO Coincident Demand	41,964	39,092	41,376	42,606	43,583	48,811	49,504	50,181	50,870	51,561	52,287	52,990	53,689	54,334	54,982	55,585
Total Statewide Coincident Demand	52,669	49,039	52,297	53,679	54,782	61,593	62,417	63,231	64,060	64,894	65,774	66,631	67,488	68,280	69,071	69,812

Form 1.5g
Statewide Net Energy for Load by Load Serving Entity (GWh)
High Case

	2000	2001	2002	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average Annual Growth 2009	Average Annual Growth 2016
PG&E North	85,172	80,009	81,693	82,637	84,310	87,620	89,179	90,640	92,191	93,860	95,646	97,202	98,968	100,453	101,980	103,451	1.8%	1.7%
PG&E Bundled Customers	69,082	69,036	65,295	66,221	67,696	70,564	71,917	73,182	74,526	75,970	77,511	78,858	80,379	81,666	83,004	84,301	1.9%	1.8%
PG&E Direct Access	9,202	4,143	9,002	9,284	10,000	10,198	10,285	10,372	10,464	10,561	10,666	10,759	10,868	10,957	11,031	11,095	0.9%	0.9%
Northern California Power Agency	2,369	2,333	2,368	2,352	2,499	2,607	2,652	2,694	2,739	2,788	2,842	2,889	2,942	2,986	3,033	3,080	1.8%	1.8%
Silicon Valley Power	2,840	2,763	2,650	2,596	2,639	2,749	2,797	2,851	2,906	2,964	3,027	3,087	3,156	3,216	3,262	3,299	1.9%	1.9%
Other Publicly Owned Utilities	1,680	1,735	2,379	2,184	1,476	1,500	1,528	1,541	1,557	1,578	1,600	1,610	1,624	1,628	1,650	1,676	1.1%	1.1%
PG&E San Francisco	5,644	5,828	5,266	5,010	5,082	5,205	5,255	5,299	5,349	5,394	5,500	5,593	5,698	5,787	5,882	5,976	1.0%	1.4%
Dept of Water Resources - North	902	1,048	1,350	1,463	1,697	1,697	1,697	1,697	1,697	1,697	1,697	1,697	1,697	1,697	1,697	1,697	0.0%	0.0%
Total North of Path 15	91,719	86,885	88,309	89,110	91,089	94,521	96,130	97,636	99,237	100,951	102,843	104,491	106,363	107,937	109,559	111,123	1.7%	1.7%
Path 26 Pacific Gas & Electric - South	6,423	6,138	5,989	6,113	6,043	6,410	6,511	6,626	6,746	6,873	7,013	7,150	7,297	7,441	7,566	7,683	2.2%	2.0%
Path 26 - Dept of Water Resources	1,491	1,731	2,231	2,417	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	2,804	0.0%	0.0%
Total Zone Path 26	7,913	7,870	8,219	8,530	8,847	9,214	9,314	9,430	9,550	9,677	9,817	9,954	10,101	10,245	10,369	10,487	1.5%	1.4%
Southern California Edison Planning Area	101,001	93,179	94,466	96,038	98,892	102,625	104,118	105,707	107,413	108,969	110,515	112,217	113,784	115,511	117,166	118,584	1.7%	1.5%
SCE Bundled Customers	81,667	79,934	73,115	75,419	78,064	81,302	82,591	83,957	85,421	86,758	88,092	89,554	90,901	92,385	93,815	95,048	1.8%	1.7%
SCE Direct Access	9,937	3,893	11,962	12,358	12,186	12,371	12,442	12,519	12,605	12,682	12,755	12,840	12,918	13,008	13,088	13,149	0.7%	0.6%
Anaheim Public Utilities Dept.	2,790	2,692	2,772	2,678	2,783	2,885	2,926	2,968	3,014	3,054	3,095	3,140	3,181	3,228	3,273	3,310	1.6%	1.5%
Riverside Utilities Dept	1,820	1,828	1,776	1,844	1,915	1,997	2,030	2,062	2,097	2,127	2,158	2,192	2,223	2,257	2,291	2,321	1.8%	1.6%
Vernon Municipal Light Dept	1,269	1,210	1,200	1,236	1,271	1,309	1,319	1,335	1,351	1,367	1,381	1,399	1,417	1,437	1,453	1,466	1.2%	1.2%
Metropolitan Water District	2,528	2,653	2,637	1,455	1,611	1,656	1,686	1,725	1,764	1,804	1,840	1,879	1,914	1,948	1,980	2,008	1.8%	1.9%
Other Publicly Owned Utilities	989	970	1,005	1,048	1,062	1,106	1,123	1,141	1,160	1,177	1,194	1,212	1,229	1,248	1,266	1,282	1.8%	1.6%
Pasadena Water and Power Dept	1,246	1,193	1,234	1,266	1,290	1,305	1,306	1,307	1,312	1,312	1,313	1,314	1,315	1,316	1,317	1,319	0.3%	0.2%
San Diego Gas & Electric	20,270	18,701	19,007	19,689	20,670	21,466	21,825	22,260	22,647	23,023	23,397	23,775	24,153	24,530	24,897	25,261	1.8%	1.7%
SDG&E Bundled Customers	14,382	16,063	15,315	16,112	16,985	17,717	18,043	18,438	18,792	19,135	19,476	19,822	20,167	20,513	20,849	21,185	2.0%	1.9%
SDG&E Direct Access	5,888	2,638	3,692	3,577	3,685	3,749	3,782	3,822	3,855	3,888	3,921	3,953	3,986	4,018	4,048	4,077	0.9%	0.8%
Dept of Water Resources - South	3,306	3,839	4,947	5,361	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564	5,564	0.0%	0.0%
Total South of Path 15	125,822	116,913	119,655	122,353	126,415	130,959	132,812	134,838	136,935	138,868	140,788	142,869	144,815	146,921	148,944	150,727	1.6%	1.5%
Sacramento Municipal Utilities District	10,098	9,651	9,984	10,559	10,800	11,316	11,570	11,909	12,207	12,477	12,789	13,111	13,436	13,758	14,068	14,475	2.5%	2.5%
WAPA/Roseville/Redding	5,010	4,745	5,264	5,394	5,765	5,874	5,991	6,080	6,177	6,283	6,395	6,478	6,579	6,647	6,738	6,829	1.4%	1.4%
Modesto Irrigation District	2,284	2,203	2,545	2,577	2,640	2,754	2,803	2,854	2,906	2,960	3,020	3,076	3,139	3,195	3,244	3,287	1.9%	1.8%
Total SMUD Control Area	17,392	16,599	17,793	18,531	19,204	19,945	20,364	20,842	21,291	21,721	22,203	22,665	23,154	23,600	24,050	24,591	2.1%	2.1%
Los Angeles Department of Water and Pow	25,136	24,293	25,300	26,155	26,811	27,660	27,798	27,963	28,126	28,280	28,408	28,550	28,689	28,835	28,953	29,063	1.0%	0.7%
Burbank Public Service Dept	1,137	1,129	1,144	1,069	1,089	1,102	1,102	1,104	1,107	1,108	1,108	1,109	1,110	1,111	1,112	1,113	0.3%	0.2%
Glendale Public Service Dept	1,169	1,188	1,101	1,167	1,189	1,203	1,204	1,205	1,209	1,210	1,210	1,211	1,212	1,213	1,214	1,215	0.3%	0.2%
Total LADWP Control Area	27,442	26,610	27,545	28,390	29,089	29,965	30,104	30,272	30,442	30,598	30,727	30,870	31,011	31,160	31,279	31,392	0.9%	0.6%
Imperial Irrigation District	2,841	3,078	3,185	3,182	3,364	3,480	3,533	3,578	3,624	3,675	3,726	3,772	3,823	3,866	3,916	3,966	1.5%	1.4%
Turlock Irrigation District	1,584	1,579	1,627	1,740	1,937	2,006	2,042	2,077	2,114	2,153	2,195	2,233	2,275	2,312	2,347	2,379	1.8%	1.7%
Far North & East Sierra	1,938	1,888	1,955	1,888	1,986	2,339	2,370	2,396	2,425	2,455	2,488	2,516	2,549	2,576	2,608	2,641	4.1%	2.4%
Total Other Control Areas	6,363	6,544	6,768	6,810	7,287	7,825	7,945	8,052	8,163	8,283	8,409	8,520	8,647	8,754	8,870	8,986	2.3%	1.8%
Total CAISO	235,553	221,319	226,167	230,553	237,150	246,010	249,827	253,813	257,930	261,972	266,237	270,425	274,715	278,861	282,941	286,811	1.7%	1.6%
Total State	286,750	271,072	278,272	284,284	292,730	303,745	308,241	312,979	317,826	322,574	327,576	332,481	337,527	342,375	347,140	351,780	1.7%	1.5%

Form 1.5h
Statewide 1 in 2 Electric Peak Demand by Load Serving Entity (MW)
High Case

	2000	2001	2002	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average Annual Growth 2004-2009	Average Annual Growth 2004-2016
PG&E North	16,674	15,535	16,511	16,244	16,217	17,266	17,576	17,864	18,172	18,504	18,868	19,185	19,544	19,848	20,175	20,495	2.3%	2.0%
PG&E Bundled Customers	15,025	13,792	13,932	13,891	13,722	14,548	14,823	15,077	15,348	15,641	15,961	16,240	16,554	16,822	17,113	17,401	2.3%	2.0%
PG&E Direct Access	511	581	1,277	1,222	1,303	1,406	1,418	1,431	1,444	1,457	1,472	1,486	1,502	1,515	1,527	1,537	2.1%	1.4%
Northern California Power Agency	467	468	489	455	491	543	553	562	571	581	593	603	614	623	634	644	3.1%	2.3%
Silicon Valley Power	415	402	402	345	366	403	410	418	426	435	444	453	464	473	480	486	3.1%	2.4%
Other Publicly Owned Utilities	257	292	412	331	336	365	371	377	383	390	397	403	410	415	421	427	2.7%	2.0%
PG&E San Francisco	948	979	885	842	854	874	883	890	899	906	924	940	957	972	988	1,004	1.0%	1.4%
Dept of Water Resources - North	82	95	123	133	154	154	154	154	154	154	154	154	154	154	154	154	0.0%	0.0%
Total North of Path 15	17,705	16,610	17,519	17,219	17,225	18,294	18,613	18,909	19,225	19,564	19,946	20,279	20,655	20,975	21,317	21,653	2.2%	1.9%
Path 26 Pacific Gas & Electric - South	1,708	1,599	1,620	1,409	1,389	1,490	1,516	1,543	1,571	1,600	1,632	1,663	1,696	1,727	1,757	1,786	2.5%	2.1%
Path 26 - Dept of Water Resources	136	157	203	220	255	255	255	255	255	255	255	255	255	255	255	255	0.0%	0.0%
Total Zone Path 26	1,844	1,757	1,823	1,629	1,643	1,745	1,771	1,798	1,826	1,855	1,887	1,918	1,951	1,982	2,012	2,041	2.1%	1.8%
Southern California Edison Planning Area	19,859	17,868	18,594	19,879	20,297	21,901	22,259	22,624	23,018	23,376	23,731	24,116	24,473	24,864	25,241	25,573	2.5%	1.9%
SCE Bundled Customers	17,918	16,009	15,299	16,497	17,108	18,506	18,829	19,156	19,506	19,827	20,146	20,490	20,808	21,155	21,492	21,791	2.7%	2.0%
SCE Direct Access	570	596	1,929	2,044	1,851	1,968	1,981	1,995	2,012	2,026	2,039	2,055	2,069	2,088	2,104	2,117	1.7%	1.1%
Anaheim Public Utilities Dept.	433	397	432	435	438	475	482	489	498	505	512	520	527	535	543	549	2.6%	1.9%
Riverside Utilities Dept	346	340	338	356	370	401	408	414	422	428	434	441	448	455	461	468	2.7%	2.0%
Vernon Municipal Light Dept	141	121	143	158	152	165	166	169	172	174	176	179	182	185	188	190	2.4%	1.9%
Metropolitan Water District	292	253	291	214	202	197	200	205	209	214	218	223	227	231	234	237	0.7%	1.3%
Other Publicly Owned Utilities	159	151	162	173	176	190	193	196	200	203	206	209	212	215	218	221	2.6%	1.9%
Pasadena Water and Power Dept	274	244	275	280	294	300	300	300	301	302	302	302	303	303	304	304	0.5%	0.3%
San Diego Gas & Electric	3,404	3,223	3,714	3,915	4,121	4,320	4,393	4,481	4,558	4,635	4,710	4,787	4,864	4,940	5,015	5,088	2.0%	1.8%
SDG&E Bundled Customers	3,177	2,875	3,168	3,351	3,543	3,732	3,800	3,882	3,956	4,027	4,098	4,171	4,243	4,315	4,385	4,454	2.2%	1.9%
SDG&E Direct Access	227	348	546	564	578	588	593	598	603	608	612	617	621	626	630	634	0.8%	0.8%
Dept of Water Resources - South	302	349	450	487	506	506	506	506	506	506	506	506	506	506	506	506	0.0%	0.0%
Total South of Path 15	23,838	21,684	23,033	24,561	25,218	27,027	27,457	27,911	28,383	28,818	29,249	29,712	30,145	30,613	31,065	31,472	2.4%	1.9%
Sacramento Municipal Utilities District	2,693	2,489	2,784	2,814	2,764	2,980	3,050	3,140	3,223	3,301	3,392	3,487	3,582	3,678	3,772	3,883	3.1%	2.9%
WAPA/Roseville/Redding	584	566	744	889	976	1,053	1,073	1,088	1,106	1,125	1,147	1,163	1,183	1,196	1,215	1,234	2.5%	2.0%
Modesto Irrigation District	461	444	509	498	504	557	567	577	587	598	610	621	634	645	655	665	3.1%	2.3%
Total SMUD Control Area	3,738	3,498	4,036	4,201	4,244	4,590	4,689	4,805	4,916	5,024	5,149	5,270	5,399	5,519	5,643	5,782	3.0%	2.6%
Los Angeles Department of Water and P	5,330	4,803	5,136	5,378	5,419	5,788	5,813	5,844	5,876	5,905	5,930	5,957	5,985	6,013	6,036	6,059	1.6%	0.9%
Burbank Public Service Dept	270	245	269	268	285	291	292	292	293	293	294	294	294	295	295	296	0.6%	0.3%
Glendale Public Service Dept	282	245	291	286	305	307	308	308	309	309	310	310	310	311	312	312	0.3%	0.2%
Total LADWP Control Area	5,882	5,293	5,696	5,933	6,008	6,387	6,412	6,444	6,478	6,508	6,533	6,561	6,589	6,619	6,643	6,667	1.5%	0.9%
Imperial Irrigation District	738	780	807	796	840	916	930	943	955	969	984	996	1,010	1,022	1,036	1,050	2.6%	1.9%
Turlock Irrigation District	322	334	353	337	391	429	437	444	452	460	469	477	486	494	502	510	2.9%	2.2%
Far North & East Sierra	287	286	296	292	308	332	336	339	342	346	350	353	357	360	364	368	2.2%	1.5%
Total Other Control Areas	1,347	1,400	1,456	1,425	1,539	1,678	1,703	1,726	1,749	1,775	1,802	1,826	1,853	1,876	1,902	1,928	2.6%	1.9%
						986												
Total CAISO	43,388	40,051	42,375	43,409	44,087	47,066	47,841	48,618	49,433	50,237	51,082	51,908	52,751	53,570	54,394	55,165	2.3%	1.9%
Total State	54,355	50,242	53,563	54,968	55,878	59,720	60,646	61,592	62,577	63,543	64,566	65,565	66,592	67,584	68,582	69,542	2.3%	1.8%
Coincident Demand																		
Total CAISO Coincident Demand	42,349	39,092	41,360	42,369	43,031	45,939	46,696	47,453	48,250	49,034	49,859	50,665	51,488	52,287	53,092	53,844	2.3%	1.9%
Total Statewide Coincident Demand	53,053	49,039	52,280	53,651	54,539	58,290	59,194	60,117	61,078	62,022	63,019	63,995	64,998	65,966	66,940	67,876	2.3%	1.8%

Form 1.5i
Statewide 1 in 10 Electric Peak Demand by Load Serving Entity (MW)
High Case

Noncoincident Demand	2000	2001	2002	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
PG&E North	16,674	15,535	16,511	16,229	16,277	17,928	18,251	18,550	18,869	19,214	19,592	19,922	20,294	20,610	20,950	21,282
PG&E San Francisco	948	979	885	842	854	904	912	920	929	937	955	971	989	1,005	1,021	1,038
Dept of Water Resources - North	82	95	123	133	154	154	154	154	154	154	154	154	154	154	154	154
Total North of Path 15	**17,705**	**16,610**	**17,519**	**17,204**	**17,285**	**18,986**	**19,317**	**19,624**	**19,952**	**20,305**	**20,702**	**21,047**	**21,438**	**21,770**	**22,126**	**22,474**
Path 26 Pacific Gas & Electric - South	1,708	1,599	1,620	1,638	1,646	1,823	1,855	1,886	1,919	1,954	1,993	2,029	2,067	2,102	2,138	2,172
Path 26 - Dept of Water Resources	136	157	203	220	255	255	255	255	255	255	255	255	255	255	255	255
Total Path 26	**1,844**	**1,757**	**1,823**	**1,858**	**1,901**	**2,077**	**2,110**	**2,141**	**2,174**	**2,209**	**2,248**	**2,283**	**2,322**	**2,357**	**2,393**	**2,427**
Southern California Edison Planning Area	19,859	17,868	18,594	19,879	20,297	23,433	23,816	24,207	24,628	25,011	25,391	25,803	26,185	26,603	27,006	27,362
Pasadena Water and Power Dept	274	244	275	280	294	320	320	320	322	322	322	323	323	324	324	325
San Diego Gas & Electric Planning Area	3,404	3,223	3,714	3,915	4,121	4,879	4,961	5,060	5,148	5,234	5,319	5,406	5,493	5,579	5,663	5,746
Dept of Water Resources - South	302	349	450	487	506	506	506	506	506	506	506	506	506	506	506	506
South of Path 15	**23,838**	**21,684**	**23,033**	**24,561**	**25,218**	**29,137**	**29,602**	**30,093**	**30,603**	**31,073**	**31,538**	**32,038**	**32,506**	**33,012**	**33,499**	**33,939**
Sacramento Municipal Utilities District	2,693	2,489	2,784	2,814	2,764	3,279	3,356	3,456	3,547	3,632	3,733	3,837	3,943	4,047	4,151	4,273
WAPA/Roseville/Redding	584	566	744	666	698	776	790	802	815	830	846	858	873	885	899	913
Modesto Irrigation District	461	444	509	504	482	544	554	563	574	584	596	607	619	630	640	650
Total SMUD Control Area	**3,738**	**3,498**	**4,036**	**3,983**	**3,944**	**4,599**	**4,701**	**4,821**	**4,936**	**5,046**	**5,175**	**5,302**	**5,435**	**5,562**	**5,691**	**5,836**
Los Angeles Department of Water and Power	5,330	4,803	5,136	5,378	5,419	6,178	6,204	6,237	6,271	6,303	6,329	6,358	6,387	6,418	6,442	6,466
Burbank Public Service Dept	270	245	269	268	285	311	311	312	313	313	313	314	314	315	315	316
Glendale Public Service Dept	282	245	291	286	305	328	328	329	330	330	330	331	331	332	333	333
Total LADWP Control Area	**5,882**	**5,293**	**5,696**	**5,933**	**6,008**	**6,816**	**6,844**	**6,878**	**6,914**	**6,946**	**6,972**	**7,002**	**7,033**	**7,065**	**7,090**	**7,116**
Imperial Irrigation District	738	780	807	796	840	980	996	1,009	1,022	1,037	1,052	1,066	1,081	1,094	1,108	1,123
Turlock Irrigation District	322	334	353	341	374	419	427	434	441	449	458	466	475	483	491	498
Far North & East Sierra	287	286	296	292	308	356	359	363	366	370	374	378	382	385	389	393
Total Other	**1,347**	**1,400**	**1,456**	**1,429**	**1,522**	**1,755**	**1,782**	**1,805**	**1,830**	**1,857**	**1,885**	**1,910**	**1,938**	**1,962**	**1,988**	**2,015**
Total ISO Noncoincident Demand	**43,388**	**40,051**	**42,375**	**43,623**	**44,404**	**50,201**	**51,030**	**51,858**	**52,729**	**53,587**	**54,488**	**55,368**	**56,266**	**57,138**	**58,017**	**58,840**
Total State	**54,355**	**50,242**	**53,563**	**54,968**	**55,878**	**63,372**	**64,355**	**65,363**	**66,409**	**67,435**	**68,520**	**69,582**	**70,672**	**71,727**	**72,786**	**73,806**
Coincident Demand																
Total ISO Coincident Demand	42,349	39,092	41,360	42,578	43,341	48,999	49,808	50,617	51,466	52,304	53,183	54,042	54,919	55,770	56,628	57,431
Total Statewide Coincident Demand	53,053	49,039	52,280	53,651	54,539	61,855	62,814	63,797	64,819	65,821	66,879	67,916	68,980	70,009	71,043	72,039

CHAPTER 2

PG&E PLANNING AREA

The Pacific Gas and Electric (PG&E) planning area includes: PG&E bundled retail customers, customers served by energy service providers (ESPs) using the PG&E distribution system to deliver electricity to end users, and customers of publicly owned utility POUs) and irrigation districts in PG&E's transmission system, with the notable exception of the Sacramento Municipal Utility District (SMUD). [1] Since SMUD is a separate and distinct control area, it is treated as its own planning area and discussed in a later chapter.

For purposes of this chapter, the PG&E planning area forecast includes the new members of the SMUD control area, Roseville, Redding, the Modesto Irrigation District (MID) and the Western Area Power Administration (WAPA). However, staff has disaggregated the revised forecasts by load serving entity (LSE). The forecasts for WAPA, Roseville, Redding, and MID can then be subtracted from the PG&E planning area and added to the SMUD control area.[2] The forecast for the Turlock Irrigation District (TID), which has formed its own control area, is moved to the "Other" control area category. Those results are presented in Chapter 1, Tables 1-3 and 1-4, and in the forms following Chapter 1. The planning area level results in this chapter include all of these LSEs.

This chapter is organized as follows. First, the new consumption and peak load forecasts for the PG&E planning area are discussed and compared with the June 2005 forecast. Second, sector consumption and peak load forecasts are presented and compared with the June 2005 forecast. Third, the disaggregated peak and energy forecast ranges are presented. Fourth, sector electricity prices used as inputs to the PG&E planning area forecast are presented. Finally, the implications of potentially inaccurate historical data on the forecast are discussed.

Planning Area Results

Table 2-1 presents a comparison of the June 2005 and new electricity consumption and peak demand forecasts for selected years.

In the PG&E planning area, the major difference between the June 2005 and baseline forecasts is in the new base year of 2004. The actual consumption was lower than projected for the year 2004 in the June 2005 forecast. Some of this difference reflects lower-than-average temperatures in 2004.

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Table 2-1: PG&E Planning Area Forecast Comparison

Consumption (GWH)						
	Jun-05	Low	Base	High	Percent Difference Base/Jun-	Percent Difference High/Low
1990	86,806	86,806	86,806	86,806	0.00%	0.00%
2000	101,528	101,528	101,528	101,528	0.00%	0.00%
2004	103,059	101,147	101,147	101,147	-1.85%	0.00%
2008	108,406	107,025	107,366	108,574	-0.96%	1.45%
2016	120,303	117,870	118,390	123,636	-1.59%	4.89%
Annual Average Growth Rates						
1990-2000	1.58%	1.58%	1.58%	1.58%		
2000-2004	0.37%	-0.09%	-0.09%	-0.09%		
2004-2008	1.27%	1.42%	1.50%	1.79%		
2004-2016	1.30%	1.28%	1.32%	1.69%		
Peak (MW)						
1990	17,039	17,039	17,039	17,039	0.00%	0.00%
2000	20,698	20,698	20,698	20,698	0.00%	0.00%
2004	20,709	20,330	20,330	20,330	-1.83%	0.00%
2008	22,331	22,053	22,142	22,406	-0.85%	1.60%
2016	24,964	24,466	24,600	25,694	-1.45%	5.02%
Annual Average Growth Rates						
1990-2000	1.96%	1.96%	1.96%	1.96%		
2000-2004	0.01%	-0.45%	-0.45%	-0.45%		
2004-2008	1.90%	2.05%	2.16%	2.46%		
2004-2016	1.57%	1.56%	1.60%	1.97%		
Historic values are shaded						

As shown in Figure 2-1, the base case has a slightly lower growth rate than the June 2005 forecast, reflecting a slower projected growth in the industrial sector. Because of rapid growth in commercial energy use, high case consumption is 1 percent higher than the base case by 2008, and 4 percent higher by 2016.

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Figure 2-1: PG&E Planning Area Electricity Forecast

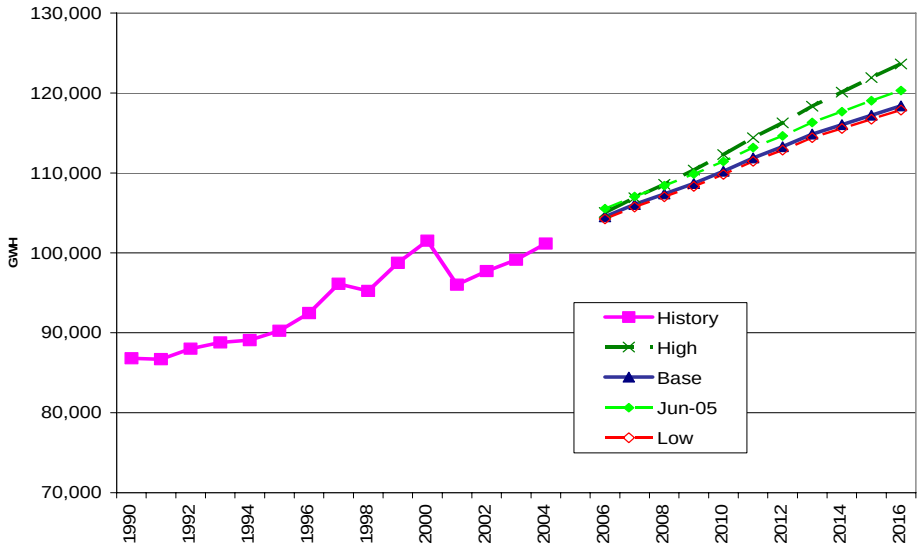

Figure 2-2 shows the PG&E planning area peak demand forecast. As in the energy forecasts, the base case is slightly lower over the entire forecast period compared with the June 2005 forecast. Differences among the ranges parallel the energy forecast results.

Figure 2-2: PG&E Planning Area Peak

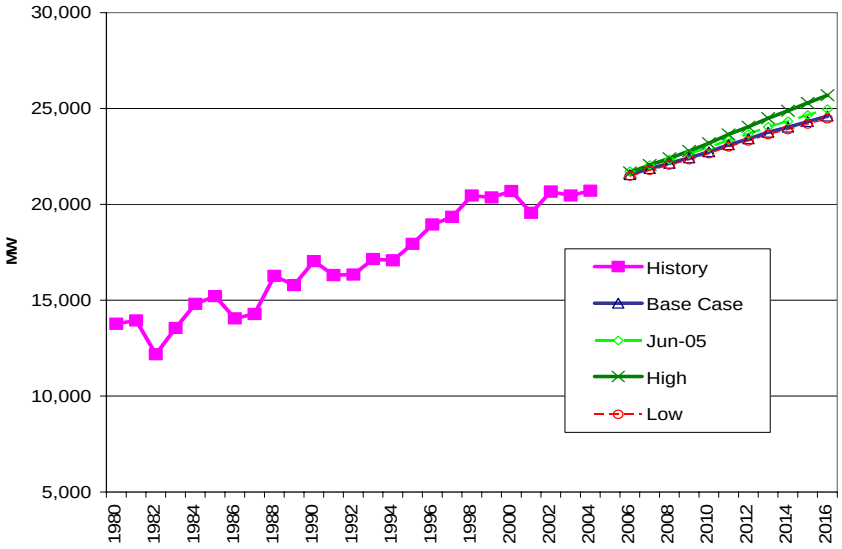

Figure 2-3 provides comparisons of PG&E planning area per capita electricity consumption between the revised and June 2005 forecasts. The level of per capita

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consumption projected in the base case forecast is relatively constant and still below recent pre-energy crisis consumption levels, while in the high case it steadily increases. After a slight adjustment up in 2005 for calibration and weather adjustment, the base case per capita peak demand, shown in Figure 2-4, remains relatively constant throughout the forecast period. The base case projected level of per capita peak is still below the levels seen in the mid to late 1990s, prior to the energy crisis. In the high case, per capita peak climbs back toward the technology boom, pre-energy crisis levels of the late 1990s.

Figure 2-3: PG&E Planning Area per Capita Electricity Consumption

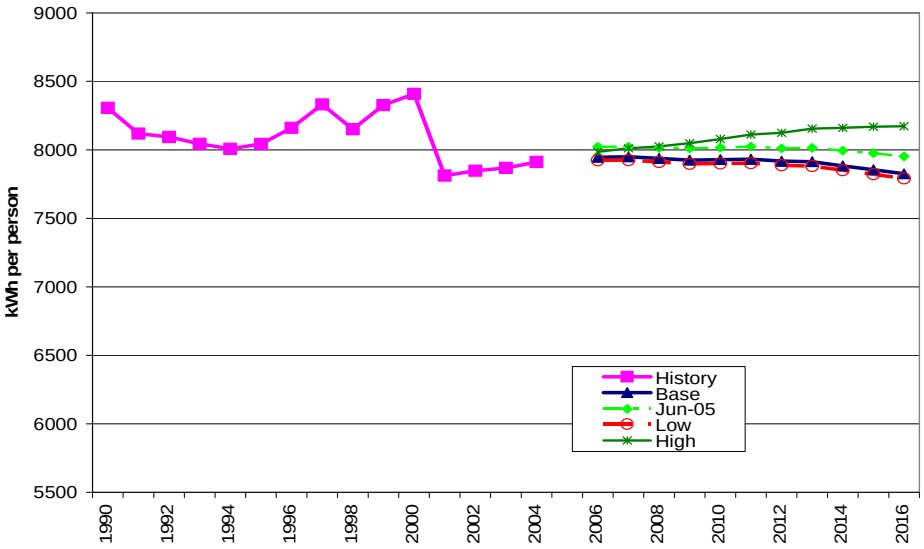

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Figure 2-4: PG&E Planning Area per Capita Peak Demand

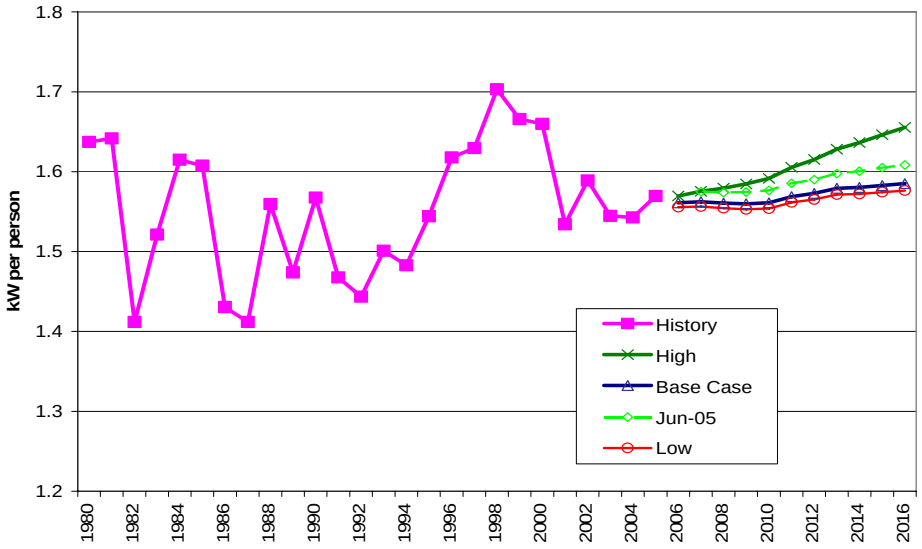

Figure 2-5 provides a comparison of the load factors from the June 2005 and base case forecasts. The load factor is a measure of the increase in peak demand relative to annual electricity consumption. Lower load factors indicate more of a needle peak, while higher load factors indicate a more stable load. Actual data show a long-term downward trend as consumption shifts away from the industrial sector toward residential and commercial use. Further, more population and economic growth in the PG&E planning area is taking place in hotter inland areas, leading to greater saturation of central air conditioning and greater use of air conditioning equipment compared with earlier concentrations in the cooler Bay Area. The projected load factor is within the range of annual load factors of recent history and declines slightly, which is consistent with higher weather-sensitive load growth in relation to base load energy growth.

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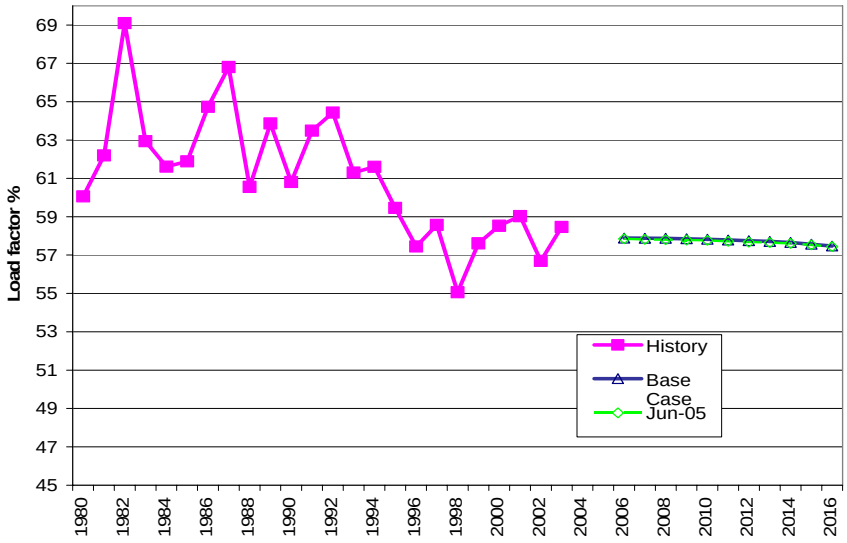
Figure 2-5: PG&E Planning Area Load Factor



Sector Level Results and Input Assumptions

Residential Sector

Figure 2-6 provides a comparison between the revised forecast cases and the June 2005 PG&E planning area residential forecasts. The base case forecast starting point in 2004 is 1.5 percent lower, but the revised forecast has a slightly higher growth rate due to higher per capita income. In the high case, a larger number of households increases consumption by 1 percent by 2016, while in the low case, more households and lower income decrease the forecast by 0.5 percent.

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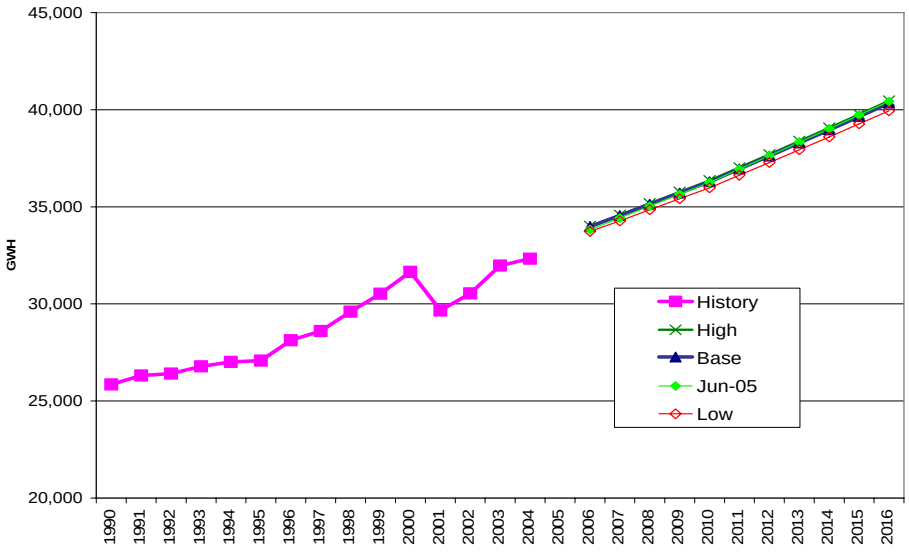
Figure 2-6: PG&E Planning Area Residential Consumption



Figures 2-7 and 2-8 compare the total households and persons-per-household projections. The same Department of Finance (DOF) population projections were used for both the June 2005 and revised forecasts. The household projections used for the base case, with revised persons-per-household assumptions, are similar to the June 2005 projections. In the constant person-per-household projections, used for the high case, the number of households is about 1.2 percent higher by 2016. Figure 2-9 provides a comparison of household income - per capita income times persons per household - between the different forecasts.

Figure 2-7: PG&E Planning Area Households

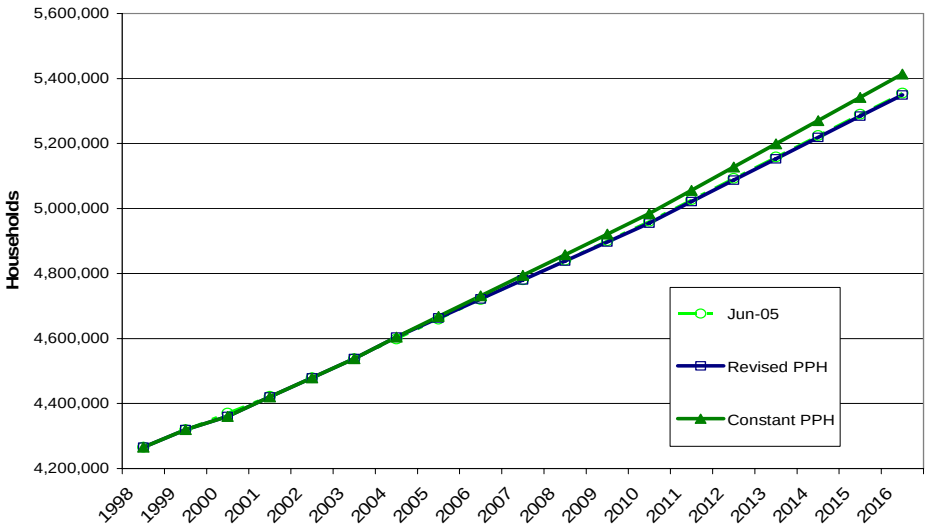


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Figure 2-8: PG&E Planning Area Residential Demographic Projections – Persons per Household

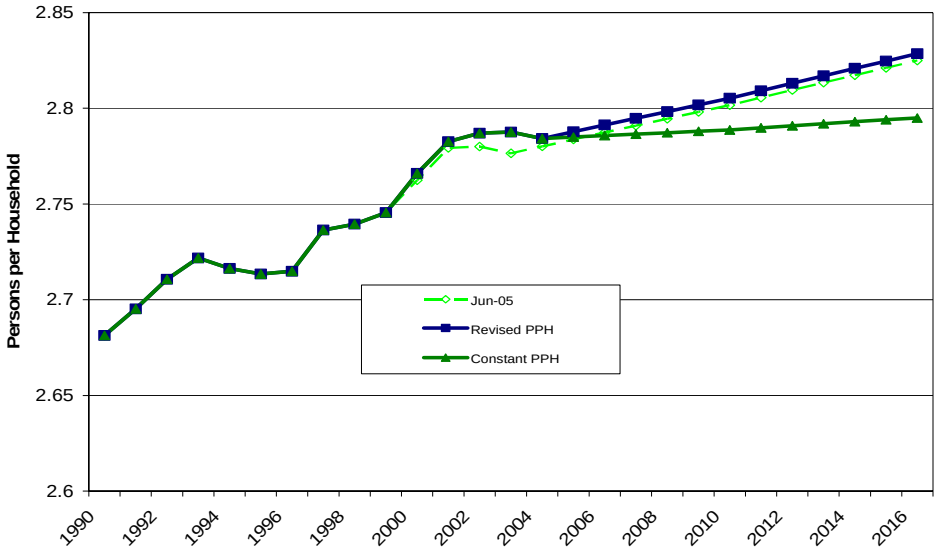

Figure 2-9: PG&E Planning Area Household Income Projections

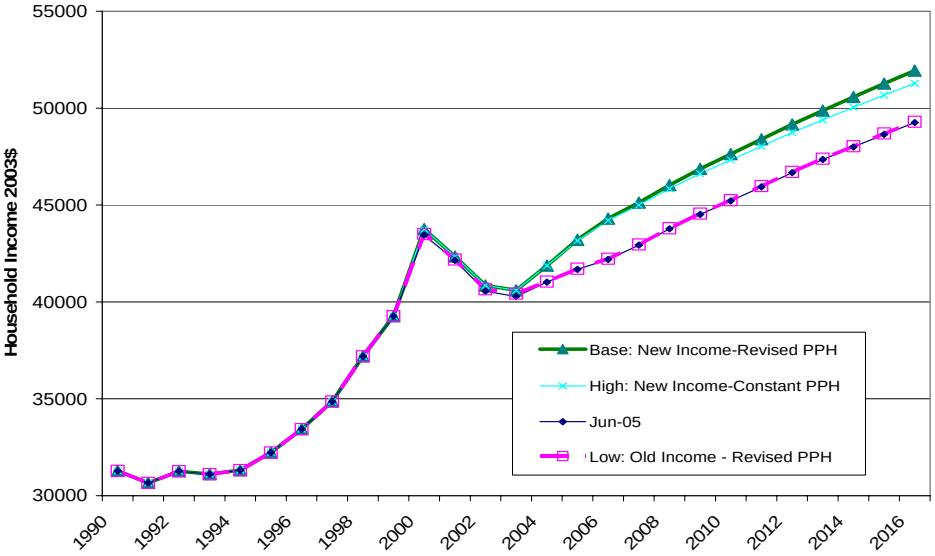

Figure 2-10 presents a comparison of electricity use per household between the two forecasts. The base case forecast is somewhat higher than that projected in June 2005, primarily due to the higher historical starting value (2004). In the high case, use per household grows more slowly, reflecting the constant persons-per-household assumption.

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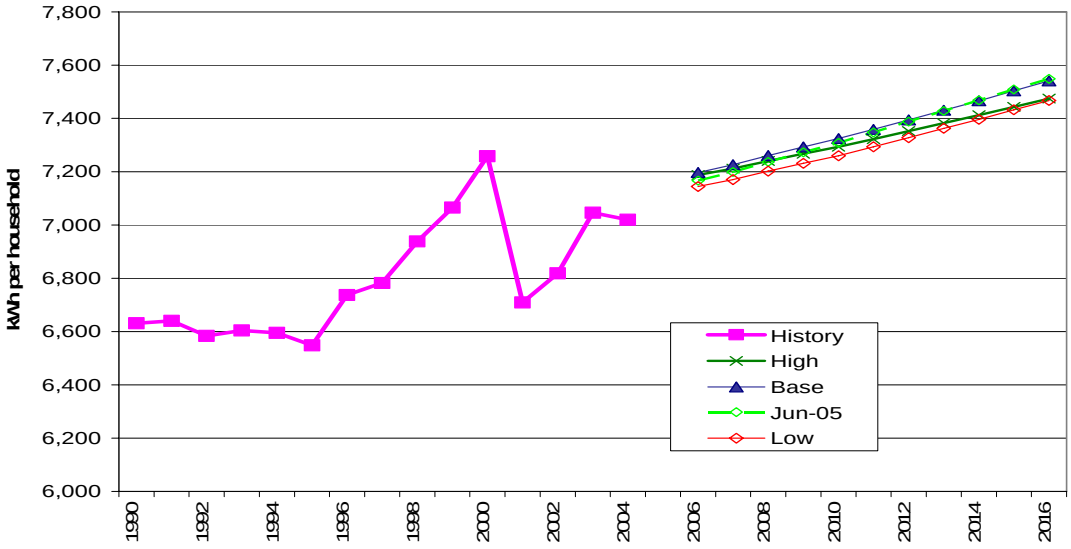
Figure 2-10: PG&E Planning Area Electricity Use per Household



Commercial Building Sector

Figure 2-11 provides a comparison of the commercial building sector forecasts. The base case forecast is lower than in June 2005 throughout the entire forecast period, because of a lower starting point; consumption in 2004 was 3.6 percent lower than projected in June 2005. The growth rates of the two forecasts are the same. In the high case, more growth in equipment energy use and the reduced effects of building and lighting standards combine to produce a growth rate twice as high as in the base case.

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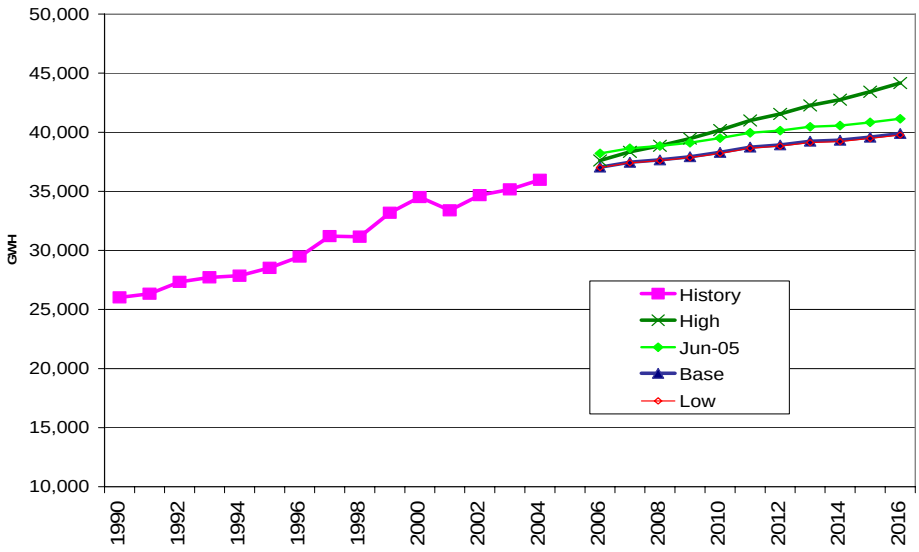
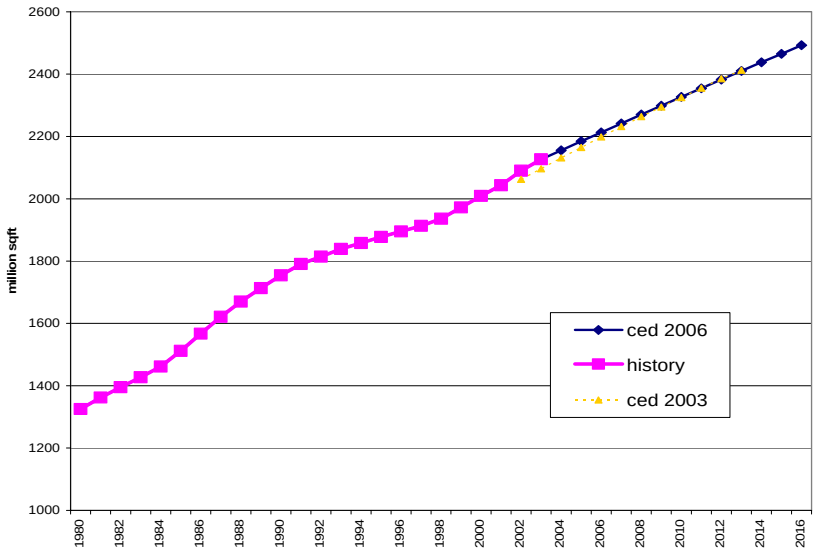
Figure 2-11. PG&E Planning Area Commercial Consumption



In staff's commercial building sector forecasting model, floor space by building type is the key driver for the various building types, including retail, offices, schools, and others. Figure 2-12 provides a comparison of total commercial floor space projections. There is a slight increase in the California Energy Demand (CED) 2006 floor space projections in the near term, after which the two forecasts are nearly identical. Floor space projections were unchanged for the revised forecasts.

Figure 2-12. PG&E Planning Area Commercial Floor space



In the base and low cases, the projected impacts of building standards produce a decline in use per square foot over the forecast period, as shown in Figure 2-13. In

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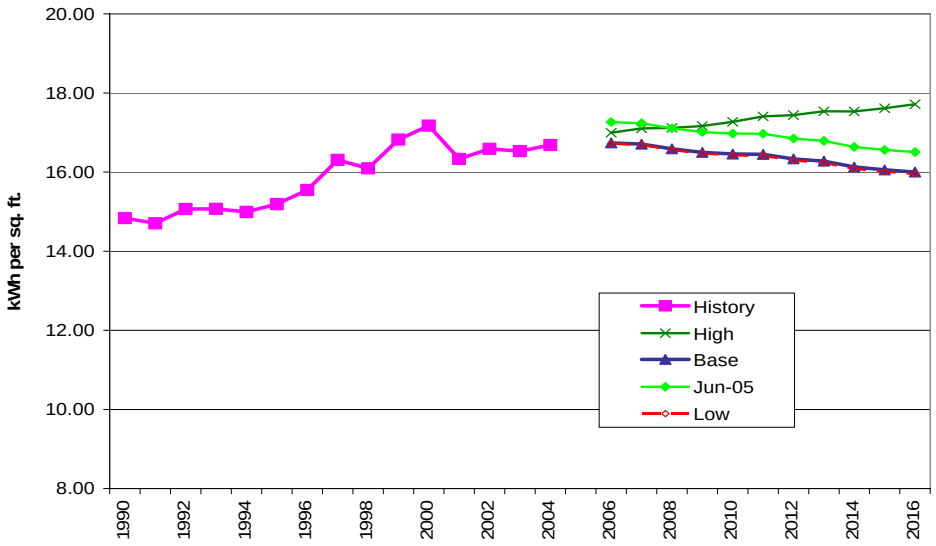
the high case, use per square foot increases 0.4 percent per year, compared with a decrease of 0.5 percent annually in the base case.

Figure 2-13. PG&E Planning Area Commercial kWh/sq.ft.



Industrial Sector

Figure 2-14 provides comparisons of the PG&E planning area industrial sector electricity consumption forecasts. The base case industrial consumption forecast is lower throughout the entire forecast period, due to a slightly lower starting point in 2004, and changes in the forecast assumptions. For the CED 2006 forecasts, staff has switched to industrial value added as an economic driver. The data provided by Economy.com allows evaluation of historical energy use and production relationships for each North America Industrial Classification System (NAICS) group, at a regional level. In response to comments at the Energy Commission workshop, staff evaluated the trends in energy use per output for each NAICS group, and revised the model efficiency trend coefficients to produce a forecast more consistent with historical trends.

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Figure 2-14. PG&E Planning Area Industrial Consumption

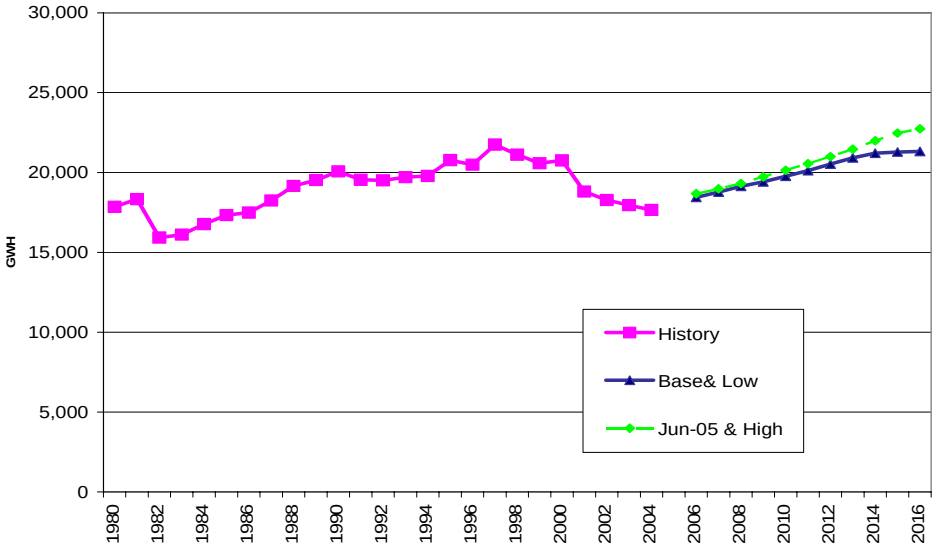

Figure 2-15 provides a comparison of electricity use per dollar of industrial production value between the June 2005 and revised forecasts. Electricity use per dollar of industrial value added in the base case forecast declines at 1.5 percent annually over the forecast period, compared with 1 percent in the June 2005 forecast. This is in contrast to the rapid decline during the technology boom of the late 1990s, but as the data for recent years show, that decline appears to have ended. The revised forecast trend is comparable to the period from 1985-1995. The effect of this change in modeling assumptions is a 4 percent lower industrial consumption forecast by 2016.

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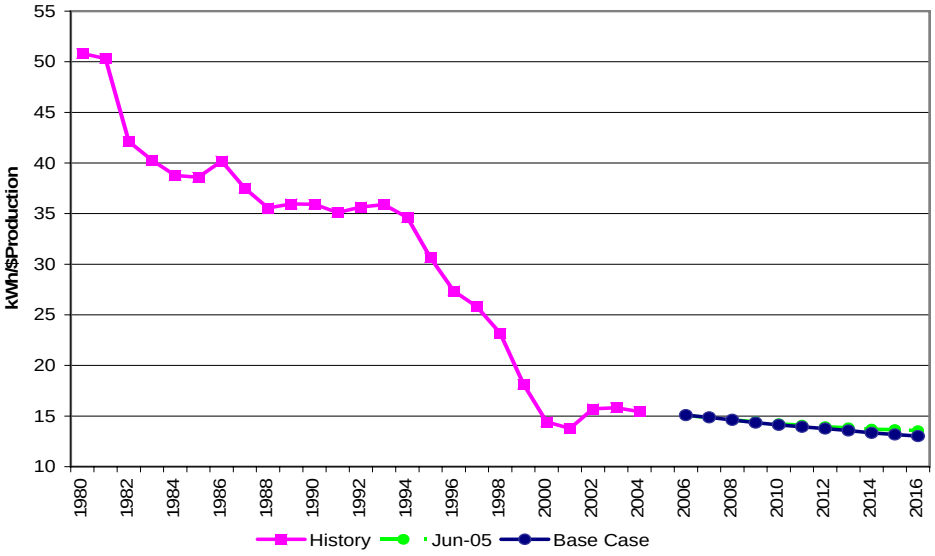
Figure 2-15. PG&E Planning Area Industrial Use Per Production Unit



Other Sectors

Figure 2-16 provides a comparison of the electricity consumption forecasts for the remaining sectors, including agriculture and water pumping, and mining and oil extraction. The revised base case forecast for agriculture and water pumping forecast is unchanged. The base case mining and oil extraction forecast is higher due to an increase in the historical starting point, and because of revisions to industrial model assumptions. The June 2005 forecast projected constant use per employee; however, in recent years the trend has been increasing. This may reflect the effects of higher oil and gas prices because of the incentive to extract resources from wells with previously declining production, an incentive likely to continue under current resource price projections. As Figure 2-17 shows, the base case now assumes a continued increase in energy intensity.

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Figure 2-16. PG&E Planning Area Other Sector Electricity Forecasts (Agriculture and Water Pumping, Mining and Oil Extraction)

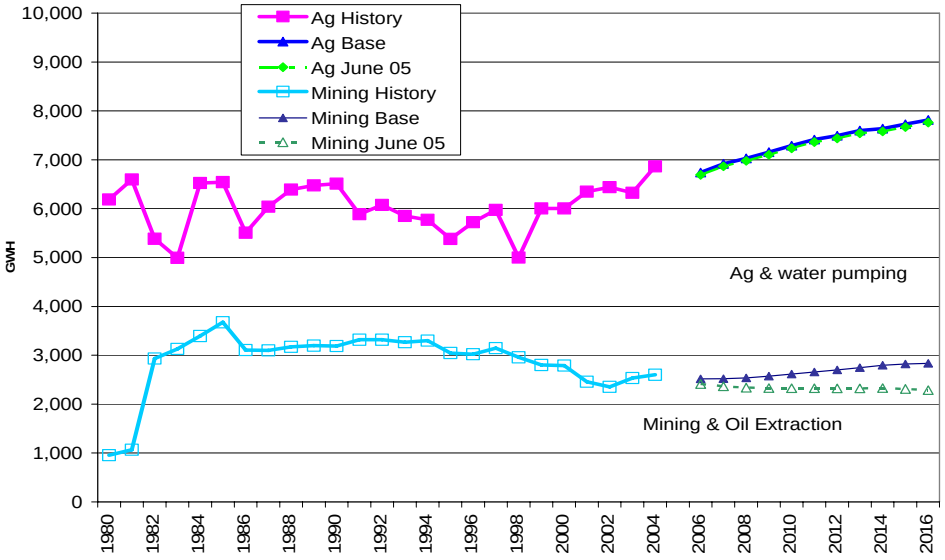

Figure 2-17. PG&E Planning Area Mining Sector Use per Employee

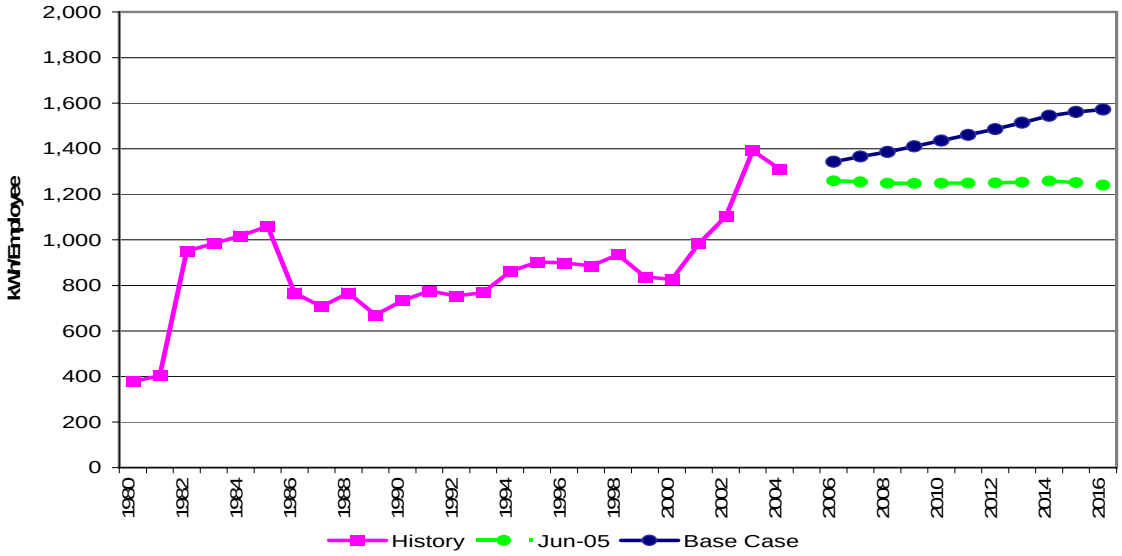

Figure 2-19 provides a comparison of the transportation, communication, and utilities (TCU) sector forecasts. The base case forecast is almost 8 percent higher because of higher-than-projected 2004 consumption.

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Figure 2-19. PG&E Planning Area TCU Consumption

To develop a peak forecast, the sector-level load factors for the PG&E planning area were applied to sector-level sales. To account for individual differences in weather sensitivity and customer mix, the results were then compared with historical peak and load factor data for each LSE. Load factors were then adjusted to produce peak estimates more consistent with historical peaks. Table 2-3 shows the resulting projections.

Table 2-3: PG&E Planning Area LSE Forecast- Base Case

	Annual Peak Demand (MW)					Annual Electricity Sales (gWh)				
	2004	2006	2009	2016	Average Annual Growth 2006-2016	2004	2006	2009	2016	Average Annual Growth 2006-2016
PG&E Service Area	17,636	18,643	19,397	21,288	1.3%	81,041	83,844	87,165	95,093	1.3%
PGE Bundled	16,390	17,316	18,044	19,877	1.4%	71,917	74,564	77,721	85,314	1.4%
Direct Access	1,247	1,327	1,353	1,411	0.6%	9,124	9,279	9,444	9,780	0.5%
WAPA	236	244	253	273	1.1%	3,361	3,360	3,510	3,771	1.2%
Redding	187	203	211	232	1.3%	771	801	831	907	1.3%
Roseville	275	299	311	341	1.3%	1,128	1,171	1,217	1,326	1.3%
Silicon Valley Power	350	380	397	434	1.3%	2,408	2,501	2,607	2,834	1.3%
TID	374	404	423	468	1.5%	1,767	1,825	1,908	2,097	1.4%
MID	482	525	548	605	1.4%	2,409	2,506	2,618	2,873	1.4%
NCPA	470	510	529	577	1.2%	2,280	2,361	2,446	2,653	1.2%
Other PGE POUs	321	343	355	382	1.1%	1,346	1,352	1,384	1,451	0.7%
Planning Area Total	20,330	21,552	22,425	24,600	1.3%	96,512	99,720	103,686	113,006	1.3%

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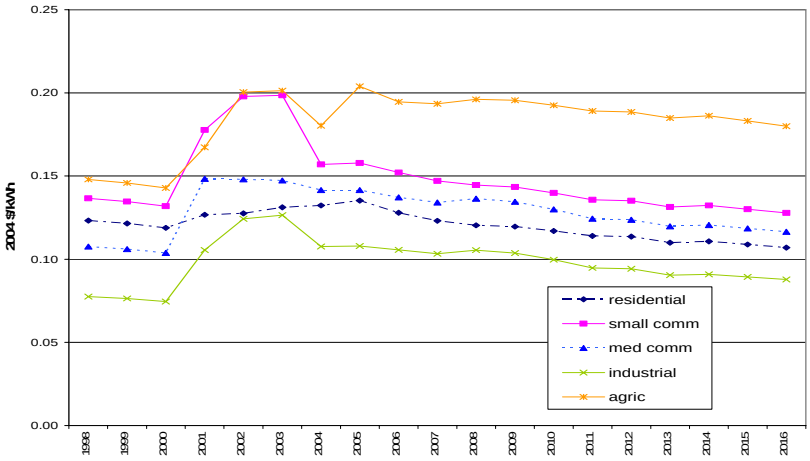
Electricity Prices

Figure 2-20 shows the sector prices used in the CED 2006 forecast for the PG&E planning area. These electricity prices are based on information provided by all LSEs in the PG&E planning area.[3] The planning area prices represent a weighted average of the PG&E service area, municipal utility, and ESP price projections, by customer class. The price forecasts were unchanged from the June 2005 forecast.

Figure 2-20. PG&E Planning Area Prices



Uncertainty Introduced by Inaccurate Historical Data

Pursuant to quarterly fuel and energy reporting (QFER) requirements, LSEs are required to provide the Energy Commission with data on historical consumption, classified by NAICS codes. As Figure 2-21 indicates, an increasing share of consumption is being reported as “unclassified.” In the absence of additional information, this consumption is allocated to the industrial, commercial, and TCU sectors, in proportion to classified sales. If the actual sectoral distribution of unclassified electricity use is different from the distribution of properly classified electricity, it will impact the forecast. For example, since commercial and industrial customers have markedly different load shapes, assigning this use to the wrong customer class could result in a too-high or too-low forecast of system peak.

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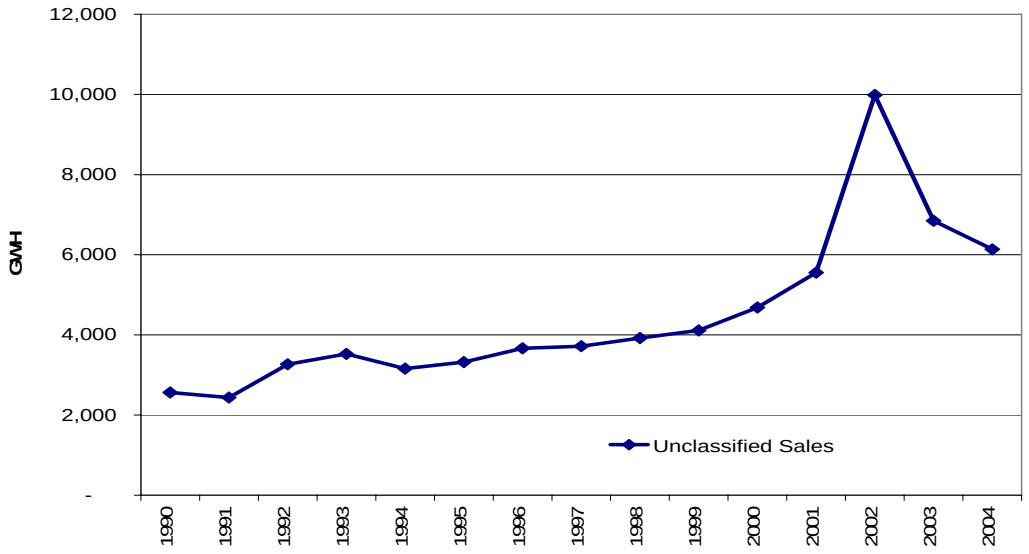
Figure 2-21. PG&E Planning Area Unclassified Sales



[1] The public utilities in the PG&E planning area are: Calaveras Public Power Agency (PPA); Central Valley Project; cities of Alameda, Biggs, Gridley, Healdsburg, Lodi, Lompoc, Palo Alto, Redding, Roseville, San Francisco, and Ukiah; Lassen Municipal Utility District; Merced Irrigation District; Modesto Irrigation District; Plumas-Sierra Rural Electric Cooperation; Shasta Dam Area Public Utility District; Silicon Valley Power; Tuolumne County PPA; Turlock Irrigation District.

[2] In future Energy Commission *Integrated Energy Policy Report* cycles, staff will prepare PG&E planning area and SMUD control area forecasts that include small municipal utilities in the proper grouping.

[3] All LSEs greater than 200MW peak demand were required to provide electricity price projections by customer sector pursuant to GENERAL INSTRUCTIONS: RETAIL ELECTRICITY PRICE FORECAST ELECTRICITY DATA REQUEST 2003-2016, adopted by Energy Commissioner Order, November 3, 2004.

Form 1.1 - PG&E Planning Area
Electricity Consumption by Sector (GWh)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighting	Total Consumption
1980	21,424	16,527	17,852	955	6,188	3,281	515	66,741
1981	21,632	18,366	18,332	1,069	6,598	3,486	484	69,966
1982	21,116	18,465	15,924	2,933	5,385	3,744	465	68,031
1983	21,858	18,851	16,111	3,130	4,995	3,727	431	69,103
1984	22,883	19,682	16,772	3,393	6,524	4,161	416	73,832
1985	23,292	20,483	17,333	3,676	6,544	4,530	424	76,282
1986	23,180	20,743	17,490	3,106	5,509	3,943	422	74,394
1987	24,278	22,413	18,249	3,102	6,040	4,509	417	79,009
1988	25,041	23,493	19,158	3,174	6,393	4,446	431	82,137
1989	25,389	24,814	19,522	3,197	6,476	4,601	435	84,434
1990	25,844	26,022	20,074	3,188	6,512	4,685	481	86,806
1991	26,308	26,325	19,548	3,318	5,887	4,799	508	86,693
1992	26,412	27,333	19,503	3,319	6,078	4,871	499	88,016
1993	26,781	27,714	19,709	3,268	5,850	4,955	507	88,783
1994	27,013	27,850	19,787	3,301	5,772	4,854	509	89,088
1995	27,080	28,516	20,773	3,045	5,380	4,934	527	90,256
1996	28,120	29,466	20,486	3,023	5,723	5,104	542	92,464
1997	28,599	31,203	21,750	3,144	5,975	4,897	559	96,127
1998	29,596	31,156	21,120	2,958	5,000	4,841	572	95,243
1999	30,521	33,176	20,576	2,800	6,005	5,165	509	98,752
2000	31,646	34,504	20,752	2,790	6,004	5,279	552	101,528
2001	29,657	33,376	18,801	2,461	6,351	4,858	509	96,012
2002	30,537	34,666	18,278	2,353	6,440	4,948	503	97,725
2003	31,976	35,159	17,951	2,535	6,325	4,682	516	99,144
2004	32,322	35,968	17,660	2,600	6,867	5,198	532	101,147
2006	33,983	37,042	18,445	2,517	6,741	5,273	529	104,529
2007	34,545	37,454	18,775	2,519	6,917	5,308	533	106,051
2008	35,131	37,653	19,134	2,538	7,030	5,342	538	107,366
2009	35,715	37,918	19,409	2,574	7,155	5,376	542	108,689
2010	36,294	38,291	19,761	2,617	7,289	5,408	546	110,207
2011	36,951	38,734	20,119	2,660	7,415	5,446	551	111,876
2012	37,619	38,918	20,525	2,702	7,492	5,484	555	113,294
2013	38,290	39,233	20,918	2,745	7,598	5,520	560	114,863
2014	38,964	39,318	21,205	2,794	7,636	5,554	564	116,037
2015	39,651	39,587	21,281	2,821	7,728	5,588	569	117,225
2016	40,341	39,886	21,317	2,836	7,817	5,621	574	118,390

Annual Growth Rates (%)

1980-1990	1.9	4.6	1.2	12.8	0.5	3.6	-0.7	2.7
1990-2000	2.0	2.9	0.3	-1.3	-0.8	1.2	1.4	1.6
2000-2004	0.5	1.0	-4.0	-1.7	3.4	-0.4	-0.9	-0.1
2004-2008	2.1	1.2	2.0	-0.6	0.6	0.7	0.3	1.5
2008-2016	1.7	0.7	1.4	1.4	1.3	0.6	0.8	1.2
2004-2016	1.9	0.9	1.6	0.7	1.1	0.7	0.6	1.3

Form 1.1a - PG&E Planning Area
Electricity Sales by Sector (GWh)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighting	Total Consumption
1980	21,424	16,527	17,221	955	6,188	3,281	515	66,110
1981	21,632	18,366	17,694	1,069	6,598	3,486	484	69,329
1982	21,116	18,456	15,226	2,911	5,385	3,744	465	67,303
1983	21,858	18,833	15,267	3,048	4,994	3,724	431	68,155
1984	22,883	19,663	16,025	3,301	6,524	4,147	416	72,958
1985	23,291	20,421	16,532	3,567	6,540	4,483	424	75,258
1986	23,178	20,657	16,397	2,707	5,502	3,845	422	72,708
1987	24,274	22,264	16,412	2,463	6,033	4,403	417	76,267
1988	25,036	23,183	16,953	2,411	6,385	4,336	431	78,735
1989	25,383	24,477	17,233	2,108	6,468	4,487	435	80,591
1990	25,837	25,659	17,755	2,015	6,504	4,563	481	82,814
1991	26,302	25,936	17,423	2,064	5,878	4,675	508	82,785
1992	26,406	26,946	17,411	2,059	6,069	4,749	499	84,138
1993	26,774	27,308	16,786	1,993	5,847	4,821	507	84,036
1994	27,013	27,436	16,716	1,901	5,770	4,738	509	84,084
1995	27,080	28,102	17,715	1,645	5,378	4,818	527	85,264
1996	28,120	29,052	16,974	1,624	5,720	4,988	542	87,019
1997	28,599	30,795	18,179	1,672	5,972	4,792	559	90,568
1998	29,596	30,753	17,915	1,475	4,997	4,736	572	90,044
1999	30,521	32,768	17,374	1,524	6,005	5,071	509	93,773
2000	31,646	34,101	17,820	1,512	6,004	5,188	552	96,822
2001	29,657	33,125	16,024	1,377	6,351	4,657	509	91,700
2002	30,537	34,351	15,437	1,229	6,440	4,918	503	93,416
2003	31,976	34,898	14,667	1,372	6,325	4,654	516	94,408
2004	32,322	35,714	14,446	1,462	6,867	5,171	532	96,512
2006	33,983	36,778	15,110	1,336	6,741	5,244	529	99,720
2007	34,545	37,185	15,380	1,317	6,917	5,279	533	101,155
2008	35,131	37,381	15,704	1,323	7,030	5,313	538	102,420
2009	35,715	37,643	15,940	1,345	7,155	5,346	542	103,686
2010	36,294	38,013	16,247	1,372	7,289	5,377	546	105,140
2011	36,951	38,452	16,555	1,398	7,415	5,415	551	106,737
2012	37,619	38,632	16,926	1,427	7,492	5,452	555	108,103
2013	38,290	38,944	17,272	1,454	7,598	5,488	560	109,605
2014	38,964	39,027	17,529	1,492	7,636	5,523	564	110,735
2015	39,651	39,293	17,573	1,508	7,728	5,556	569	111,879
2016	40,341	39,590	17,583	1,514	7,817	5,588	574	113,006
Annual Growth Rates (%)								
1980-1990	1.9	4.5	0.3	7.8	0.5	3.4	-0.7	2.3
1990-2000	2.0	2.9	0.0	-2.8	-0.8	1.3	1.4	1.6
2000-2004	0.5	1.2	-5.1	-0.8	3.4	-0.1	-0.9	-0.1
2004-2008	2.1	1.1	2.1	-2.5	0.6	0.7	0.3	1.5
2008-2016	1.7	0.7	1.4	1.7	1.3	0.6	0.8	1.2
2004-2016	1.9	0.9	1.7	0.3	1.1	0.6	0.6	1.3

Form 1.1b - PG&E Planning Area
Electricity Sales by Sector (GWh)
High Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighting	Total Consumption
1980	21,424	16,527	17,221	955	6,188	3,281	515	66,110
1981	21,632	18,366	17,694	1,069	6,598	3,486	484	69,329
1982	21,116	18,456	15,226	2,911	5,385	3,744	465	67,303
1983	21,858	18,833	15,267	3,048	4,994	3,724	431	68,155
1984	22,883	19,663	16,025	3,301	6,524	4,147	416	72,958
1985	23,291	20,421	16,532	3,567	6,540	4,483	424	75,258
1986	23,178	20,657	16,397	2,707	5,502	3,845	422	72,708
1987	24,274	22,264	16,412	2,463	6,033	4,403	417	76,267
1988	25,036	23,183	16,953	2,411	6,385	4,336	431	78,735
1989	25,383	24,477	17,233	2,108	6,468	4,487	435	80,591
1990	25,837	25,659	17,755	2,015	6,504	4,563	481	82,814
1991	26,302	25,936	17,423	2,064	5,878	4,675	508	82,785
1992	26,406	26,946	17,411	2,059	6,069	4,749	499	84,138
1993	26,774	27,308	16,786	1,993	5,847	4,821	507	84,036
1994	27,013	27,436	16,716	1,901	5,770	4,738	509	84,084
1995	27,080	28,102	17,715	1,645	5,378	4,818	527	85,264
1996	28,120	29,052	16,974	1,624	5,720	4,988	542	87,019
1997	28,599	30,795	18,179	1,672	5,972	4,792	559	90,568
1998	29,596	30,753	17,915	1,475	4,997	4,736	572	90,044
1999	30,521	32,768	17,374	1,524	6,005	5,071	509	93,773
2000	31,646	34,101	17,820	1,512	6,004	5,188	552	96,822
2001	29,657	33,125	16,024	1,377	6,351	4,657	509	91,700
2002	30,537	34,351	15,437	1,229	6,440	4,918	503	93,416
2003	31,976	34,898	14,667	1,372	6,325	4,654	516	94,408
2004	32,322	35,714	14,446	1,462	6,867	5,171	532	96,512
2006	34,005	37,350	15,041	1,336	6,741	5,244	529	100,245
2007	34,577	38,068	15,299	1,317	6,917	5,279	533	101,989
2008	35,173	38,587	15,665	1,323	7,030	5,313	538	103,628
2009	35,767	39,184	16,030	1,345	7,155	5,346	542	105,369
2010	36,356	39,907	16,381	1,372	7,289	5,377	546	107,229
2011	37,023	40,714	16,761	1,398	7,415	5,415	551	109,278
2012	37,702	41,268	17,173	1,427	7,492	5,452	555	111,069
2013	38,383	41,976	17,642	1,454	7,598	5,488	560	113,100
2014	39,068	42,452	18,078	1,492	7,636	5,523	564	114,813
2015	39,765	43,134	18,306	1,508	7,728	5,556	569	116,566
2016	40,465	43,860	18,434	1,514	7,817	5,588	574	118,252
Annual Growth Rates (%)								
1980-1990	1.9	4.5	0.3	7.8	0.5	3.4	-0.7	2.3
1990-2000	2.0	2.9	0.0	-2.8	-0.8	1.3	1.4	1.6
2000-2004	0.5	1.2	-5.1	-0.8	3.4	-0.1	-0.9	-0.1
2004-2008	2.1	2.0	2.0	-2.5	0.6	0.7	0.3	1.8
2008-2016	1.8	1.6	2.1	1.7	1.3	0.6	0.8	1.7
2004-2016	1.9	1.7	2.1	0.3	1.1	0.6	0.6	1.7

Form 1.1c - PG&E Planning Area
Electricity Sales by Sector (GWh)
Low Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighti ng	Total Consumption
1980	21,424	16,527	17,221	955	6,188	3,281	515	66,110
1981	21,632	18,366	17,694	1,069	6,598	3,486	484	69,329
1982	21,116	18,456	15,226	2,911	5,385	3,744	465	67,303
1983	21,858	18,833	15,267	3,048	4,994	3,724	431	68,155
1984	22,883	19,663	16,025	3,301	6,524	4,147	416	72,958
1985	23,291	20,421	16,532	3,567	6,540	4,483	424	75,258
1986	23,178	20,657	16,397	2,707	5,502	3,845	422	72,708
1987	24,274	22,264	16,412	2,463	6,033	4,403	417	76,267
1988	25,036	23,183	16,953	2,411	6,385	4,336	431	78,735
1989	25,383	24,477	17,233	2,108	6,468	4,487	435	80,591
1990	25,837	25,659	17,755	2,015	6,504	4,563	481	82,814
1991	26,302	25,936	17,423	2,064	5,878	4,675	508	82,785
1992	26,406	26,946	17,411	2,059	6,069	4,749	499	84,138
1993	26,774	27,308	16,786	1,993	5,847	4,821	507	84,036
1994	27,013	27,436	16,716	1,901	5,770	4,738	509	84,084
1995	27,080	28,102	17,715	1,645	5,378	4,818	527	85,264
1996	28,120	29,052	16,974	1,624	5,720	4,988	542	87,019
1997	28,599	30,795	18,179	1,672	5,972	4,792	559	90,568
1998	29,596	30,753	17,915	1,475	4,997	4,736	572	90,044
1999	30,521	32,768	17,374	1,524	6,005	5,071	509	93,773
2000	31,646	34,101	17,820	1,512	6,004	5,188	552	96,822
2001	29,657	33,125	16,024	1,377	6,351	4,657	509	91,700
2002	30,537	34,351	15,437	1,229	6,440	4,918	503	93,416
2003	31,976	34,898	14,667	1,372	6,325	4,654	516	94,408
2004	32,322	35,714	14,446	1,462	6,867	5,171	532	96,512
2006	33,737	36,743	15,110	1,336	6,741	5,244	529	99,438
2007	34,277	37,137	15,380	1,317	6,917	5,279	533	100,839
2008	34,849	37,322	15,704	1,323	7,030	5,313	538	102,079
2009	35,413	37,573	15,940	1,345	7,155	5,346	542	103,314
2010	35,976	37,934	16,247	1,372	7,289	5,377	546	104,742
2011	36,623	38,363	16,555	1,398	7,415	5,415	551	106,320
2012	37,280	38,535	16,926	1,427	7,492	5,452	555	107,667
2013	37,940	38,838	17,272	1,454	7,598	5,488	560	109,150
2014	38,601	38,914	17,529	1,492	7,636	5,523	564	110,260
2015	39,274	39,174	17,573	1,508	7,728	5,556	569	111,383
2016	39,947	39,464	17,583	1,514	7,817	5,588	574	112,486
Annual Growth Rates (%)								
1980-1990	1.9	4.5	0.3	7.8	0.5	3.4	-0.7	2.3
1990-2000	2.0	2.9	0.0	-2.8	-0.8	1.3	1.4	1.6
2000-2004	0.5	1.2	-5.1	-0.8	3.4	-0.1	-0.9	-0.1
2004-2008	1.9	1.1	2.1	-2.5	0.6	0.7	0.3	1.4
2008-2016	1.7	0.7	1.4	1.7	1.3	0.6	0.8	1.2
2004-2016	1.8	0.8	1.7	0.3	1.1	0.6	0.6	1.3

Form 1.2 - PG&E Planning Area
Net Energy for Load (GWh)
Base Case

Year	Total Consumption	Net Losses	Gross Generation	Private Supply	Net Energy for Load
1980	66,741	6,347	73,088	631	72,456
1981	69,966	6,656	76,622	638	75,984
1982	68,031	6,461	74,492	728	73,764
1983	69,103	6,543	75,645	948	74,698
1984	73,832	7,004	80,836	874	79,962
1985	76,282	7,225	83,506	1,024	82,482
1986	74,394	6,980	81,374	1,686	79,688
1987	79,009	7,322	86,331	2,742	83,589
1988	82,137	7,559	89,695	3,402	86,294
1989	84,434	7,737	92,171	3,843	88,328
1990	86,806	7,950	94,756	3,992	90,764
1991	86,693	7,947	94,640	3,908	90,732
1992	88,016	8,077	96,093	3,878	92,215
1993	88,783	8,067	96,850	4,747	92,104
1994	89,088	8,072	97,160	5,004	92,156
1995	90,256	8,185	98,441	4,991	93,450
1996	92,464	8,354	100,818	5,445	95,373
1997	96,127	8,695	104,822	5,559	99,262
1998	95,243	8,644	103,887	5,199	98,688
1999	98,752	9,002	107,755	4,980	102,775
2000	101,528	9,295	110,823	4,705	106,117
2001	96,012	8,803	104,816	4,313	100,503
2002	97,725	8,968	106,693	4,309	102,384
2003	99,144	9,063	108,207	4,736	103,472
2004	101,147	9,265	110,412	4,635	105,777
	0				
2006	104,529	9,573	114,103	4,809	109,293
2007	106,051	9,711	115,762	4,896	110,866
2008	107,366	9,832	117,198	4,946	112,252
2009	108,689	9,954	118,643	5,003	113,640
2010	110,207	10,093	120,300	5,067	115,233
2011	111,876	10,247	122,123	5,139	116,984
2012	113,294	10,378	123,672	5,191	118,481
2013	114,863	10,522	125,386	5,258	120,127
2014	116,037	10,631	126,668	5,302	121,366
2015	117,225	10,740	127,965	5,346	122,619
2016	118,390	10,849	129,239	5,384	123,854

Annual Growth Rates (%)

1980-1990	2.7	2.3	2.6	20.3	2.3
1990-2000	1.6	1.6	1.6	1.7	1.6
2000-2004	-0.1	-0.1	-0.1	-0.4	-0.1
2004-2008	1.5	1.5	1.5	1.6	1.5
2008-2016	1.4	1.4	1.4	1.2	1.4
2004-2016	1.3	1.3	1.3	1.3	1.3

Form 1.3 -PG&E
Peak Demand by Sector (MW)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	Other	Total Consumption
1980	4,506	3,601	2,664	123	1,346	421	12,660
1981	4,673	3,459	2,687	141	1,443	417	12,820
1982	4,136	3,160	2,143	320	1,060	413	11,232
1983	4,803	3,709	2,380	369	795	454	12,510
1984	4,541	4,224	2,742	440	1,147	558	13,651
1985	5,717	3,857	2,220	420	1,297	530	14,040
1986	4,941	3,908	2,459	344	979	461	13,092
1987	5,261	4,024	2,382	320	1,004	488	13,480
1988	5,765	4,898	2,566	375	1,253	543	15,400
1989	5,167	5,118	2,718	405	1,043	586	15,037
1990	5,865	5,172	2,968	374	1,249	575	16,203
1991	6,064	5,004	2,466	368	1,071	554	15,526
1992	5,306	5,329	2,850	381	1,088	590	15,544
1993	6,086	5,469	2,910	380	976	611	16,431
1994	5,892	5,435	2,994	391	1,084	612	16,408
1995	6,438	5,743	3,160	362	867	623	17,192
1996	7,099	6,064	3,098	354	939	636	18,189
1997	6,906	6,381	3,306	368	996	611	18,567
1998	7,464	6,666	3,492	379	867	658	19,526
1999	7,799	6,502	2,945	356	1,117	680	19,399
2000	8,458	6,566	2,771	348	852	662	19,658
2001	7,885	6,139	2,454	296	1,172	609	18,554
2002	8,155	6,912	2,287	287	1,272	644	19,557
2003	7,499	7,508	2,456	329	1,012	647	19,450
2004	7,761	7,181	2,662	312	1,168	619	19,702
2005	8,230	7,143	2,679	306	1,071	655	20,084
2006	8,384	7,250	2,735	298	1,127	660	20,454
2007	8,520	7,332	2,786	299	1,154	664	20,755
2008	8,662	7,374	2,841	302	1,167	668	21,015
2009	8,806	7,428	2,883	307	1,185	672	21,282
2010	8,947	7,504	2,937	313	1,208	676	21,586
2011	9,114	7,593	2,992	319	1,230	681	21,929
2012	9,282	7,632	3,054	325	1,241	686	22,219
2013	9,451	7,697	3,113	331	1,260	690	22,543
2014	9,624	7,718	3,157	338	1,262	695	22,793
2015	9,799	7,774	3,172	341	1,278	699	23,062
2016	9,973	7,835	3,180	344	1,294	703	23,329
Annual Growth Rates (%)							
1980-1990	2.7	3.7	1.1	11.8	-0.7	3.2	2.5
1990-2000	3.7	2.4	-0.7	-0.7	-3.8	1.4	2.0
2000-2004	-2.1	2.3	-1.0	-2.7	8.2	-1.7	0.1
2004-2008	2.8	0.7	1.6	-0.8	0.0	1.9	1.6
2008-2016	1.8	0.8	1.4	1.6	1.3	0.6	1.3
2004-2016	2.1	0.7	1.5	0.8	0.9	1.1	1.4

Form 1.4a - PG&E Planning Area
Peak Demand (MW)
Base Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	12,660	1,218	13,878	106	13,772	60.1
1981	12,820	1,233	14,053	107	13,946	62.2
1982	11,232	1,078	12,309	122	12,187	69.1
1983	12,510	1,198	13,708	159	13,548	62.9
1984	13,651	1,310	14,961	147	14,815	61.6
1985	14,040	1,345	15,386	172	15,214	61.9
1986	13,092	1,243	14,335	283	14,052	64.7
1987	13,480	1,263	14,743	460	14,283	66.8
1988	15,400	1,438	16,838	571	16,267	60.6
1989	15,037	1,396	16,433	645	15,788	63.9
1990	16,203	1,507	17,709	670	17,039	60.8
1991	15,526	1,442	16,969	656	16,313	63.5
1992	15,544	1,445	16,989	651	16,338	64.4
1993	16,431	1,516	17,947	797	17,150	61.3
1994	16,408	1,510	17,918	840	17,077	61.6
1995	17,192	1,586	18,778	838	17,940	59.5
1996	18,189	1,676	19,865	914	18,951	57.5
1997	18,567	1,711	20,278	933	19,345	58.6
1998	19,526	1,809	21,335	873	20,462	55.1
1999	19,399	1,801	21,200	836	20,364	57.6
2000	19,658	1,830	21,488	790	20,698	58.5
2001	18,554	1,730	20,284	724	19,560	58.7
2002	19,557	1,827	21,384	723	20,661	56.6
2003	19,450	1,810	21,259	795	20,464	57.7
2004	19,702	1,836	21,538	778	20,760	58.2
2006	20,454	1,906	22,359	807	21,552	57.9
2007	20,755	1,933	22,688	822	21,866	57.9
2008	21,015	1,958	22,972	830	22,142	57.9
2009	21,282	1,983	23,265	840	22,425	57.8
2010	21,586	2,011	23,597	851	22,747	57.8
2011	21,929	2,043	23,972	863	23,110	57.8
2012	22,219	2,071	24,290	871	23,419	57.8
2013	22,543	2,101	24,644	883	23,761	57.7
2014	22,793	2,125	24,918	890	24,028	57.7
2015	23,062	2,150	25,212	897	24,315	57.6
2016	23,329	2,175	25,504	904	24,600	57.5

Annual Growth Rates (%)

1980-1990	2.5	2.2	2.5	20.3	2.2
1990-2000	2.0	2.0	2.0	1.7	2.0
2000-2004	0.1	0.1	0.1	-0.4	0.1
2004-2008	1.6	1.6	1.6	1.6	1.6
2008-2016	1.3	1.3	1.3	1.1	1.3
2004-2016	1.4	1.4	1.4	1.3	1.4

Form 1.4b - PG&E Planning Area
Peak Demand (MW)
Low Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	12,660	1,218	13,878	106	13,772	60.1
1981	12,820	1,233	14,053	107	13,946	62.2
1982	11,232	1,078	12,309	122	12,187	69.1
1983	12,510	1,198	13,708	159	13,548	62.9
1984	13,651	1,310	14,961	147	14,815	61.6
1985	14,040	1,345	15,386	172	15,214	61.9
1986	13,092	1,243	14,335	283	14,052	64.7
1987	13,480	1,263	14,743	460	14,283	66.8
1988	15,400	1,438	16,838	571	16,267	60.6
1989	15,037	1,396	16,433	645	15,788	63.9
1990	16,203	1,507	17,709	670	17,039	60.8
1991	15,526	1,442	16,969	656	16,313	63.5
1992	15,544	1,445	16,989	651	16,338	64.4
1993	16,431	1,516	17,947	797	17,150	61.3
1994	16,408	1,510	17,918	840	17,077	61.6
1995	17,192	1,586	18,778	838	17,940	59.5
1996	18,189	1,676	19,865	914	18,951	57.5
1997	18,567	1,711	20,278	933	19,345	58.6
1998	19,526	1,809	21,335	873	20,462	55.1
1999	19,399	1,801	21,200	836	20,364	57.6
2000	19,658	1,830	21,488	790	20,698	58.5
2001	18,461	1,720	20,181	724	19,457	59.0
2002	19,522	1,823	21,345	723	20,622	56.7
2003	19,227	1,788	21,015	795	20,220	58.4
2004	19,311	1,798	21,109	778	20,330	59.4
2006	20,386	1,899	22,285	807	21,478	57.9
2007	20,679	1,926	22,605	822	21,783	57.9
2008	20,934	1,950	22,884	830	22,053	57.9
2009	21,194	1,974	23,168	840	22,329	57.9
2010	21,492	2,002	23,494	851	22,644	57.9
2011	21,831	2,034	23,865	863	23,002	57.8
2012	22,117	2,061	24,177	871	23,306	57.8
2013	22,436	2,091	24,526	883	23,644	57.8
2014	22,681	2,114	24,795	890	23,905	57.7
2015	22,946	2,139	25,085	897	24,187	57.6
2016	23,207	2,163	25,370	904	24,466	57.5

Annual Growth Rates (%)

1980-1990	2.5	2.2	2.5	20.3	2.2
1990-2000	2.0	2.0	2.0	1.7	2.0
2000-2004	-0.4	-0.4	-0.4	-0.4	-0.4
2004-2008	2.0	2.1	2.0	1.6	2.1
2008-2016	1.3	1.3	1.3	1.1	1.3
2004-2016	1.5	1.6	1.5	1.3	1.6

Form 1.4c - PG&E Planning Area
Peak Demand (MW)
High Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	12,660	1,218	13,878	106	13,772	60.1
1981	12,820	1,233	14,053	107	13,946	62.2
1982	11,232	1,078	12,309	122	12,187	69.1
1983	12,510	1,198	13,708	159	13,548	62.9
1984	13,651	1,310	14,961	147	14,815	61.6
1985	14,040	1,345	15,386	172	15,214	61.9
1986	13,092	1,243	14,335	283	14,052	64.7
1987	13,480	1,263	14,743	460	14,283	66.8
1988	15,400	1,438	16,838	571	16,267	60.6
1989	15,037	1,396	16,433	645	15,788	63.9
1990	16,203	1,507	17,709	670	17,039	60.8
1991	15,526	1,442	16,969	656	16,313	63.5
1992	15,544	1,445	16,989	651	16,338	64.4
1993	16,431	1,516	17,947	797	17,150	61.3
1994	16,408	1,510	17,918	840	17,077	61.6
1995	17,192	1,586	18,778	838	17,940	59.5
1996	18,189	1,676	19,865	914	18,951	57.5
1997	18,567	1,711	20,278	933	19,345	58.6
1998	19,526	1,809	21,335	873	20,462	55.1
1999	19,399	1,801	21,200	836	20,364	57.6
2000	19,658	1,830	21,488	790	20,698	58.5
2001	18,461	1,720	20,181	724	19,457	59.0
2002	19,522	1,823	21,345	723	20,622	56.7
2003	19,227	1,788	21,015	795	20,220	58.4
2004	19,311	1,798	21,109	778	20,330	59.4
2006	20,561	1,916	22,477	807	21,669	57.9
2007	20,923	1,950	22,873	822	22,051	57.9
2008	21,255	1,981	23,236	830	22,406	57.9
2009	21,610	2,015	23,625	840	22,785	57.9
2010	21,992	2,051	24,043	851	23,192	57.8
2011	22,421	2,091	24,512	863	23,649	57.8
2012	22,793	2,126	24,920	871	24,048	57.8
2013	23,216	2,166	25,382	883	24,499	57.8
2014	23,573	2,200	25,773	890	24,883	57.7
2015	23,954	2,236	26,191	897	25,293	57.7
2016	24,326	2,272	26,598	904	25,694	57.6

Annual Growth Rates (%)

1980-1990	2.5	2.2	2.5	20.3	2.2
1990-2000	2.0	2.0	2.0	1.7	2.0
2000-2004	-0.4	-0.4	-0.4	-0.4	-0.4
2004-2008	2.4	2.5	2.4	1.6	2.5
2008-2016	1.7	1.7	1.7	1.1	1.7
2004-2016	1.9	2.0	1.9	1.3	2.0

Form 1.5 - PG&E Planning Area
Noncoincident Peak Demand Temperature Scenarios
Base Case

Year	1-in-2 Temperatures	1-in-5 Temperatures	1-in-10 Temperatures	1-in-20 Temperatures	1-in-5 Multiplier	1-in-10 Multiplier	1-in-20 Multiplier
2006	21,552	21,992	22,273	22,651	1.020	1.033	1.051
2007	21,866	22,313	22,598	22,981	1.020	1.033	1.051
2008	22,142	22,595	22,883	23,271	1.020	1.033	1.051
2009	22,425	22,884	23,176	23,569	1.020	1.033	1.051
2010	22,747	23,212	23,508	23,907	1.020	1.033	1.051
2011	23,110	23,582	23,883	24,288	1.020	1.033	1.051
2012	23,419	23,897	24,202	24,613	1.020	1.033	1.051
2013	23,761	24,247	24,556	24,973	1.020	1.033	1.051
2014	24,028	24,519	24,831	25,253	1.020	1.033	1.051
2015	24,315	24,812	25,128	25,555	1.020	1.033	1.051
2016	24,600	25,103	25,423	25,855	1.020	1.033	1.051

Form 1.7a - PG&E Planning Area
Private Supply by Sector (GWh)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighting	Total Consumption
1980	0	0	631	0	0	0	0	631
1981	0	0	638	0	0	0	0	638
1982	0	9	698	21	0	0	0	728
1983	0	19	844	82	0	3	0	948
1984	0	20	747	93	0	14	0	874
1985	1	63	801	109	4	47	0	1,024
1986	2	86	1,093	399	7	98	0	1,686
1987	4	149	1,837	639	7	106	0	2,742
1988	5	311	2,205	763	8	110	0	3,402
1989	6	337	2,289	1,089	8	114	0	3,843
1990	7	363	2,319	1,173	8	122	0	3,992
1991	7	390	2,124	1,254	9	124	0	3,908
1992	6	387	2,093	1,261	10	122	0	3,878
1993	7	406	2,923	1,274	3	134	0	4,747
1994	0	414	3,071	1,400	3	116	0	5,004
1995	0	414	3,058	1,400	3	116	0	4,991
1996	0	414	3,512	1,400	3	116	0	5,445
1997	0	408	3,570	1,473	3	105	0	5,559
1998	0	403	3,205	1,483	3	105	0	5,199
1999	0	408	3,202	1,276	0	94	0	4,980
2000	0	403	2,932	1,278	0	92	0	4,705
2001	0	251	2,778	1,084	0	200	0	4,313
2002	0	315	2,840	1,124	0	29	0	4,309
2003	0	260	3,284	1,163	0	28	0	4,736
2004	0	255	3,214	1,138	0	28	0	4,635
2006	0	264	3,335	1,181	0	29	0	4,809
2007	0	269	3,395	1,202	0	29	0	4,896
2008	0	272	3,430	1,214	0	30	0	4,946
2009	0	275	3,469	1,228	0	30	0	5,003
2010	0	279	3,514	1,244	0	30	0	5,067
2011	0	282	3,564	1,262	0	31	0	5,139
2012	0	285	3,600	1,275	0	31	0	5,191
2013	0	289	3,646	1,291	0	32	0	5,258
2014	0	291	3,677	1,302	0	32	0	5,302
2015	0	294	3,707	1,313	0	32	0	5,346
2016	0	296	3,734	1,322	0	32	0	5,384

Annual Growth Rates (%)

1980-1990		13.9			20.3
1990-2000	1.1	2.4	0.9	-2.8	1.7
2000-2004	-10.8	2.3	-2.9	-32.3	-0.4
2004-2008	1.6	1.6	1.6	0.9	1.6
2008-2016	1.2	1.2	1.2	1.1	1.2
2004-2016	1.3	1.3	1.3	1.0	1.3

Form 1.8
PG&E Service Area and Bundled Customer Forecasts

Forecasts for PGE Bundled Customers

	Peak Demand (MW)			Net Energy for Load (GWh)		
	Low	Base	High	Low	Base	High
1999	17,297	17,297	17,297	77,932	77,932	77,932
2000	17,681	17,681	17,681	81,149	81,149	81,149
2001	16,371	16,371	16,371	81,002	81,002	81,002
2002	16,437	16,437	16,437	76,549	76,549	76,549
2003	16,328	16,328	16,328	77,343	77,343	77,343
2004	16,390	16,390	16,390	78,821	78,821	78,821
2005	16,961	16,995	17,047	80,155	80,297	80,539
2006	17,250	17,316	17,416	81,450	81,720	82,179
2007	17,504	17,577	17,734	82,655	82,957	83,682
2008	17,728	17,807	18,029	83,739	84,064	85,107
2009	17,959	18,044	18,344	84,825	85,180	86,621
2010	18,221	18,311	18,682	86,071	86,449	88,237
2011	18,520	18,615	19,062	87,456	87,852	90,023
2012	18,773	18,872	19,394	88,652	89,066	91,600
2013	19,055	19,158	19,768	89,961	90,393	93,374
2014	19,276	19,383	20,088	90,972	91,424	94,894
2015	19,518	19,631	20,434	91,998	92,469	96,452
2016	19,760	19,877	20,775	93,008	93,501	97,959
Annual Growth Rate (%)						
2006-2016	1.4%	1.4%	1.8%	1.3%	1.4%	1.8%

Forecasts for PGE Service Area (Including Direct Access)

	Peak Demand (MW)			Net Energy for Load (GWh)		
	Low	Base	High	Low	Base	High
1999	17,751	17,751	17,751	86,653	86,653	86,653
2000	18,192	18,192	18,192	90,351	90,351	90,351
2001	16,952	16,952	16,952	85,145	85,145	85,145
2002	17,714	17,714	17,714	85,551	85,551	85,551
2003	17,564	17,564	17,564	86,628	86,628	86,628
2004	17,636	17,636	17,636	88,821	88,821	88,821
2005	18,276	18,311	18,364	90,242	90,385	90,646
2006	18,577	18,643	18,746	91,617	91,890	92,377
2007	18,840	18,914	19,076	92,889	93,195	93,967
2008	19,073	19,152	19,382	94,033	94,362	95,480
2009	19,311	19,398	19,709	95,172	95,531	97,085
2010	19,583	19,675	20,060	96,485	96,869	98,797
2011	19,893	19,989	20,455	97,944	98,346	100,690
2012	20,156	20,256	20,800	99,204	99,624	102,359
2013	20,448	20,552	21,189	100,581	101,020	104,242
2014	20,676	20,785	21,521	101,634	102,093	105,851
2015	20,923	21,037	21,878	102,686	103,164	107,483
2016	21,169	21,288	22,227	103,719	104,220	109,054
Annual Growth Rate (%)						
2006-2016	1.3%	1.3%	1.7%	1.2%	1.3%	1.7%

Form 1.9
PG&E Planning Area Forecasts by Load Serving Entity (LSE)

Peak Demand (MW) by LSE - Base Case

	PG&E Service Area	PG&E Bundled	Direct Access	WAPA	Redding	Roseville	SVP	TID	MID	NCPA	Other PGE POUs	Planning Area Total
1999	17,751	17,297	454	223	212	194	389	310	491	530	262	20,364
2000	18,192	17,681	511	200	173	211	415	322	461	467	257	20,698
2001	16,952	16,371	581	185	151	229	402	334	444	468	292	19,457
2002	17,714	16,437	1,277	286	204	253	402	353	509	489	412	20,622
2003	17,364	16,142	1,222	462	173	254	345	337	498	455	331	20,220
2004	17,267	15,964	1,303	493	195	288	366	391	504	491	336	20,330
2005	17,897	16,506	1,391	499	211	311	395	419	544	530	355	21,162
2006	18,219	16,816	1,403	515	215	317	402	428	555	539	362	21,552
2007	18,483	17,070	1,413	524	218	321	408	434	563	546	368	21,866
2008	18,717	17,294	1,422	529	221	325	415	441	572	553	371	22,142
2009	18,957	17,526	1,431	536	223	329	420	447	580	559	375	22,425
2010	19,228	17,787	1,441	543	226	334	427	454	588	567	380	22,747
2011	19,535	18,082	1,452	552	230	339	434	462	598	575	386	23,110
2012	19,798	18,335	1,463	556	233	343	441	468	608	582	389	23,419
2013	20,088	18,614	1,474	563	236	348	448	476	618	590	394	23,761
2014	20,317	18,836	1,482	565	239	352	454	482	626	596	397	24,028
2015	20,564	19,077	1,487	571	242	356	457	488	633	603	400	24,315
2016	20,810	19,318	1,492	577	245	361	459	494	640	610	404	24,600
Annual Growth Rate (%)												
2006-2016	1.4%	1.5%	0.7%	1.4%	1.4%	1.4%	1.5%	1.5%	1.5%	1.3%	1.2%	1.4%

Electricity Sales by LSE (GWH) - Base Case

	PG&E Service Area	PG&E Bundled	Direct Access	WAPA	Redding	Roseville	SVP	TID	MID	NCPA	Other PGE POUs	Planning Area Total
1999	79,063	71,106	7,958	3,210	771	838	2,439	1,400	2,174	2,403	1,476	93,773
2000	82,437	74,041	8,396	2,995	673	903	2,591	1,446	2,084	2,161	1,533	96,822
2001	77,687	73,907	3,780	2,743	671	915	2,521	1,440	2,010	2,129	1,583	91,700
2002	78,057	69,844	8,213	3,095	716	992	2,418	1,485	2,322	2,161	2,170	93,416
2003	79,040	70,569	8,471	3,100	755	1,066	2,369	1,588	2,351	2,146	1,993	94,408
2004	81,041	71,917	9,124	3,361	771	1,128	2,408	1,767	2,409	2,280	1,346	96,512
2005	82,470	73,265	9,205	3,256	787	1,153	2,459	1,789	2,460	2,326	1,323	98,024
2006	83,844	74,564	9,279	3,360	801	1,171	2,501	1,825	2,506	2,361	1,352	99,720
2007	85,033	75,693	9,341	3,424	812	1,187	2,538	1,855	2,545	2,392	1,368	101,155
2008	86,099	76,703	9,396	3,464	821	1,202	2,575	1,882	2,583	2,418	1,374	102,420
2009	87,165	77,721	9,444	3,510	831	1,217	2,607	1,908	2,618	2,446	1,384	103,686
2010	88,386	78,879	9,507	3,560	842	1,234	2,647	1,938	2,658	2,478	1,396	105,140
2011	89,734	80,159	9,574	3,611	855	1,253	2,690	1,970	2,702	2,514	1,409	106,737
2012	90,900	81,267	9,633	3,641	865	1,269	2,732	1,999	2,744	2,543	1,410	108,103
2013	92,173	82,477	9,696	3,682	876	1,287	2,775	2,030	2,788	2,577	1,417	109,605
2014	93,152	83,418	9,735	3,699	885	1,301	2,805	2,054	2,821	2,601	1,417	110,735
2015	94,130	84,372	9,758	3,735	896	1,314	2,821	2,076	2,848	2,627	1,433	111,879
2016	95,093	85,314	9,780	3,771	907	1,326	2,834	2,097	2,873	2,653	1,451	113,006
Annual Growth Rate (%)												
2006-2016	1.4%	1.5%	0.6%	1.0%	1.4%	1.4%	1.5%	1.5%	1.6%	1.3%	0.5%	1.4%

Form 2.2 - PG&E Planning Area
Planning Area Economic and Demographic Assumptions

Year	Population	Households - Base & Low	Households - High	Per Capita Income - Low (2003$)	Per Capita Income - Base (2003$)	Per Capita Income - HIgh (2003$)	Industrial Value Added (Millions 2003$)	Commercial Floorspace (MM Sqft.)
1980	8,584,533	3,270,577	3,270,577	25,899	25,899	25,899	35,134	1,325
1981	8,680,391	3,306,645	3,306,645	26,143	26,143	26,143	36,437	1,362
1982	8,795,960	3,338,699	3,338,699	26,133	26,133	26,133	37,803	1,395
1983	9,047,696	3,400,157	3,400,157	26,920	26,920	26,920	39,999	1,427
1984	9,283,232	3,469,060	3,469,060	28,692	28,692	28,692	43,279	1,461
1985	9,511,287	3,551,749	3,551,749	29,300	29,300	29,300	44,919	1,512
1986	9,718,573	3,635,162	3,635,162	29,688	29,688	29,688	43,519	1,567
1987	9,876,853	3,706,216	3,706,216	29,950	29,950	29,950	48,657	1,621
1988	10,047,187	3,774,572	3,774,572	30,613	30,613	30,613	53,879	1,670
1989	10,273,789	3,848,713	3,848,713	30,995	30,995	30,995	54,306	1,713
1990	10,450,124	3,897,420	3,897,420	31,282	31,282	31,282	55,900	1,754
1991	10,678,197	3,961,902	3,961,902	30,661	30,661	30,661	55,707	1,790
1992	10,874,483	4,011,740	4,011,740	31,264	31,264	31,264	54,711	1,814
1993	11,037,374	4,055,134	4,055,134	31,115	31,115	31,115	54,932	1,839
1994	11,125,196	4,095,707	4,095,707	31,319	31,319	31,319	57,178	1,858
1995	11,221,518	4,135,477	4,135,477	32,230	32,230	32,230	67,795	1,877
1996	11,331,199	4,173,736	4,173,736	33,436	33,436	33,436	74,916	1,895
1997	11,538,192	4,216,615	4,216,615	34,866	34,866	34,866	84,283	1,913
1998	11,684,838	4,265,384	4,265,384	37,188	37,188	37,188	91,139	1,936
1999	11,859,731	4,319,650	4,319,650	39,266	39,266	39,266	113,460	1,972
2000	12,073,758	4,359,912	4,359,912	43,507	43,757	43,757	143,857	2,009
2001	12,290,332	4,420,351	4,420,351	42,189	42,345	42,345	137,888	2,043
2002	12,452,798	4,478,712	4,478,712	40,657	40,855	40,855	116,747	2,090
2003	12,599,783	4,537,970	4,537,970	40,434	40,602	40,602	115,614	2,127
2004	12,784,429	4,604,486	4,604,486	41,050	41,873	41,873	118,025	2,156
2005	12,970,174	4,663,142	4,667,822	41,717	43,208	43,161	122,399	2,184
2006	13,155,946	4,721,794	4,731,167	42,230	44,303	44,210	126,138	2,213
2007	13,341,739	4,780,322	4,794,524	42,969	45,133	44,991	130,227	2,242
2008	13,527,556	4,838,722	4,857,890	43,805	46,030	45,837	134,983	2,270
2009	13,713,382	4,896,999	4,921,263	44,556	46,872	46,625	139,632	2,298
2010	13,899,286	4,955,167	4,984,662	45,253	47,632	47,330	144,348	2,327
2011	14,104,158	5,021,255	5,056,176	45,979	48,392	48,035	148,963	2,355
2012	14,309,058	5,087,203	5,127,701	46,710	49,163	48,746	153,915	2,382
2013	14,513,969	5,153,015	5,199,236	47,388	49,874	49,398	158,962	2,410
2014	14,718,886	5,218,685	5,270,777	48,040	50,577	50,040	164,030	2,438
2015	14,923,828	5,284,216	5,342,331	48,690	51,272	50,672	166,620	2,465
2016	15,128,765	5,349,605	5,413,891	49,298	51,939	51,275	168,996	2,492
Annual Growth Rates (%)								
1980-1990	2.0	1.8	1.8	1.9	1.9	1.9	4.8	2.8
1990-2000	1.5	1.1	1.1	3.4	3.4	3.4	9.9	1.4
2000-2004	1.4	1.4	1.4	-1.4	-1.1	-1.1	-4.8	1.8
2004-2008	1.4	1.2	1.3	1.6	2.4	2.3	3.4	1.3
2008-2016	1.4	1.3	1.4	1.6	1.6	1.5	3.3	1.2
2004-2016	1.4	1.3	1.4	1.5	1.8	1.7	3.0	1.2

Form 2.3 - PG&E Planning Area
Electricity Rate Forecast (2003 cents/kwh)

Year	GDP Implicit Price Deflator	Residential	Small Commercial	Medium Commercial	Industrial	Agriculture
1990	75.49	14.03	0.00	0.00	8.50	11.79
1991	78.13	14.59	0.00	0.00	8.71	12.20
1992	79.92	14.99	0.00	0.00	9.02	12.50
1993	81.77	15.01	0.00	0.00	8.57	13.64
1994	83.51	14.95	0.00	0.00	8.40	12.85
1995	85.22	13.58	0.00	0.00	7.47	12.35
1996	86.83	13.94	0.00	0.00	7.97	12.33
1997	88.28	13.71	0.00	0.00	7.83	14.97
1998	89.26	12.32	13.67	10.76	7.75	14.80
1999	90.54	12.15	13.47	10.60	7.64	14.59
2000	92.52	11.89	13.19	10.38	7.46	14.28
2001	94.74	12.67	17.77	14.83	10.55	16.73
2002	96.31	12.76	19.79	14.80	12.43	20.06
2003	98.07	13.12	19.86	14.73	12.65	20.14
2004	100.00	13.23	15.70	14.16	10.77	18.02
2005	101.51	13.53	15.79	14.16	10.80	20.40
2006	103.64	12.79	15.22	13.72	10.57	19.46
2007	105.58	12.31	14.71	13.41	10.33	19.35
2008	107.36	12.04	14.46	13.64	10.55	19.62
2009	109.26	11.96	14.34	13.45	10.37	19.56
2010	111.24	11.70	13.99	13.00	9.97	19.26
2011	113.25	11.40	13.57	12.44	9.48	18.91
2012	115.23	11.36	13.52	12.37	9.43	18.86
2013	117.23	11.00	13.14	11.98	9.04	18.49
2014	119.25	11.08	13.23	12.06	9.09	18.63
2015	121.31	10.89	13.01	11.85	8.94	18.31
2016	123.42	10.70	12.79	11.65	8.78	18.00

Annual Growth Rates (%)						
1990-2000	2.1	-1.6			-1.3	1.9
2000-2003	2.0	3.3	14.6	12.4	19.2	12.1
2003-2008	1.8	-1.7	-6.1	-1.5	-3.6	-0.5
2008-2016	1.8	-1.5	-1.5	-2.0	-2.3	-1.1
2003-2016	1.8	-1.6	-3.3	-1.8	-2.8	-0.9

CHAPTER 3

SCE PLANNING AREA

The Southern California Edison (SCE) planning area includes: SCE bundled retail customers; customers served by various energy service providers (ESPs) using the SCE distribution system to deliver electricity to end users; and customers of various southern California municipal and irrigation district utilities, with the exception of the cities of Los Angeles, Pasadena, Glendale and Burbank, and the Imperial Irrigation District. Also not included in the SCE planning area is San Diego County and the southern portion of Orange County served by San Diego Gas and Electric (SDG&E).

This chapter is organized as follows. First, the revised forecasted ranges of consumption and peak for the SCE planning area are discussed and compared with the June 2005 forecast. The forecasted load factor, jointly determined by consumption and peak load estimates, is presented. Second, the ranges of sector consumption forecasts are presented. The ranges of sector peak forecasts are driven by their respective energy forecasts and have been omitted. Third, the baseline forecast disaggregated by load serving entities (LSEs) within the SCE planning area is presented. Fourth, sector electricity prices used as inputs to the SCE planning area forecast are presented. Finally, the implications of potentially inaccurate historical data, yet to be resolved, are also discussed.

Forecast Results

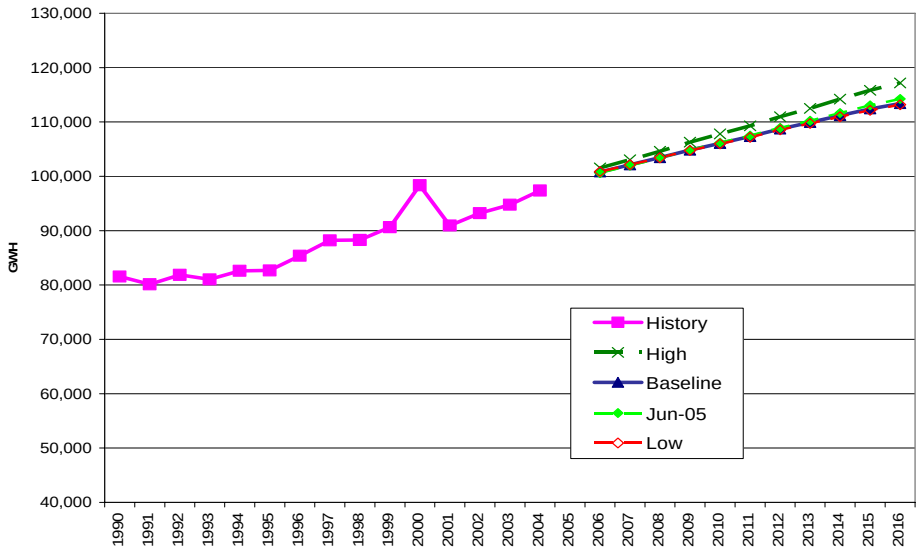
Table 3-1 presents a comparison of revised forecast ranges with the June 2005 forecast for both electricity consumption and peak demand. The revised baseline forecast is essentially the same as the June 2005 forecast in 2008, but is slightly lower by 2016 for both energy and peak demand. The revised high forecast is over 1 percent higher than the June 2005 baseline by 2008. This difference grows to over 3.5 percent by 2016.

Figures 3-1 and 3-2 present graphical illustrations of the revised forecast ranges when compared with the June 2005 baseline forecast. The composition of the forecast ranges is described in Chapter 1.

Table 3-1: SCE Planning Area Revised Forecast Comparison

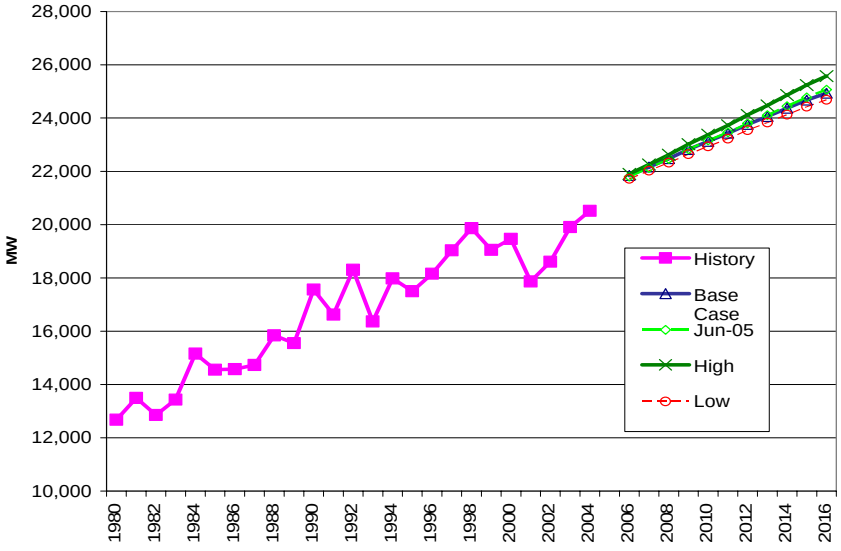
Consumption (GWH)						
	Jun-05	Low	Base	High	Percent Difference Base/Jun-05	Percent Difference High/Low
1990	81,579	81,579	81,579	81,579	0.00%	0.00%
2000	96,319	98,346	98,346	98,346	2.10%	0.00%
2004	98,234	97,389	97,389	97,389	-0.86%	0.00%
2008	103,354	102,909	103,437	104,089	0.08%	1.15%
2016	114,230	112,577	113,409	116,597	-0.72%	3.57%
Annual Average Growth Rates						
1990-2000	1.67%	1.89%	1.89%	1.89%		
2000-2004	0.49%	-0.24%	-0.24%	-0.24%		
2004-2008	1.28%	1.39%	1.52%	1.68%		
2004-2016	1.27%	1.22%	1.28%	1.51%		
Peak (MW)						
	Jun-05	Low	Base	High	Percent Difference Base/Draft	Percent Difference High/Low
1990	17,564	17,564	17,564	17,564	0.00%	0.00%
2000	19,465	19,859	19,859	19,859	2.02%	0.00%
2004	20,519	20,297	20,297	20,297	-1.08%	0.00%
2008	22,468	22,328	22,483	22,624	0.07%	1.33%
2016	25,066	24,688	24,934	25,573	-0.53%	3.59%
Annual Average Growth Rates						
1990-2000	1.03%	1.24%	1.24%	1.24%		
2000-2004	1.33%	0.55%	0.55%	0.55%		
2004-2008	2.30%	2.41%	2.59%	2.75%		
2004-2016	1.68%	1.65%	1.73%	1.94%		
Historic values are shaded						

Figure 3-1: SCE Planning Area Revised Electricity Forecast



The California energy demand (CED) 2006 SCE planning area peak demand forecast, shown in Figure 3-2, has been adjusted for an assumed return to normal peak temperature conditions. Peak temperatures in southern California have been below the 54-year median value since 1998; the temperature at the time of the 2004 peak was roughly 2.5 degrees below the median, a “1-in-2” value; the 2005 peak day temperature continued a similar trend. The adjustment to reflect the return to 54-year “average” weather conditions at the time of the annual peak increases the SCE peak load by about 1,000 MW.

Figure 3-2: SCE Planning Area Peak



As Figure 3-3 shows, per-capita electricity consumption is projected to remain relatively constant in all but the high case.

Figure 3-3: SCE Planning Area per-Capita Electricity Consumption

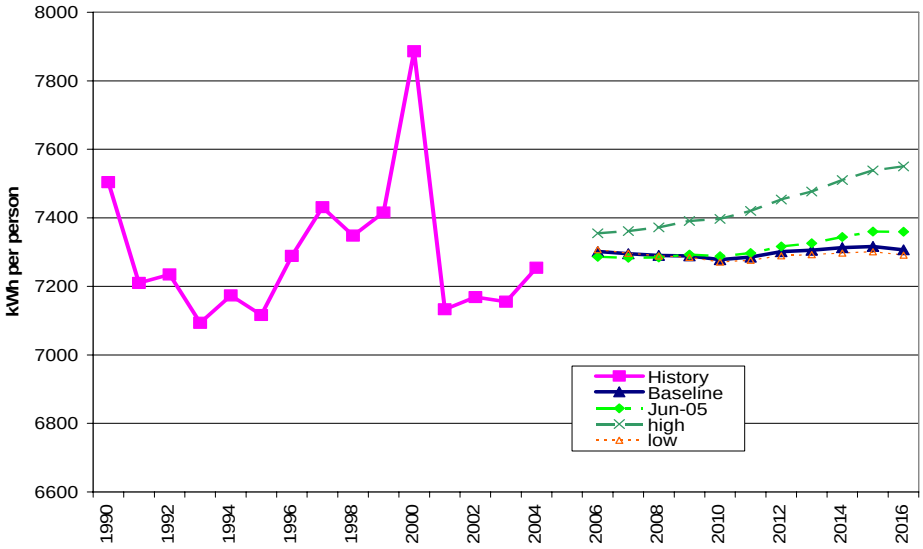


Figure 3-4 provides a comparison of per-capita peak demand. The results are similar to the per-capita consumption values, although the magnitude is somewhat smaller because of the smaller peak impact of increased industrial consumption.

Figure 3-4: SCE Planning Area per-Capita Peak Demand

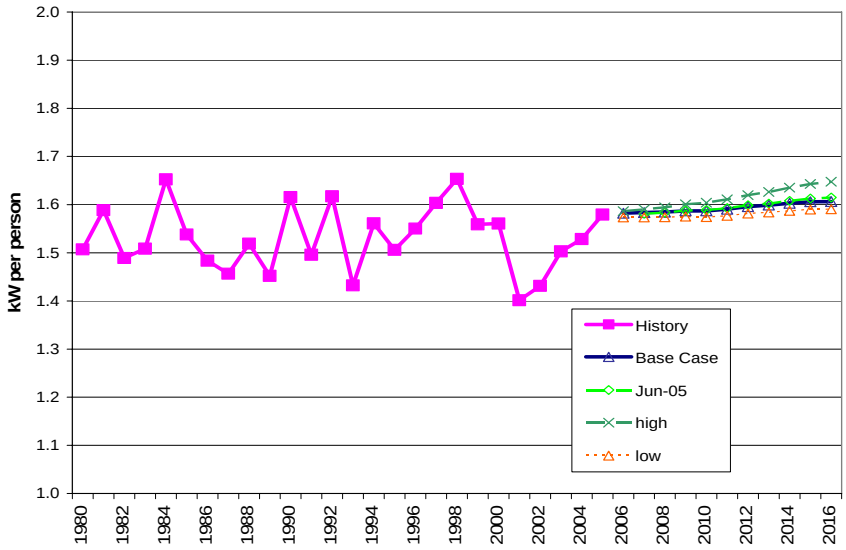
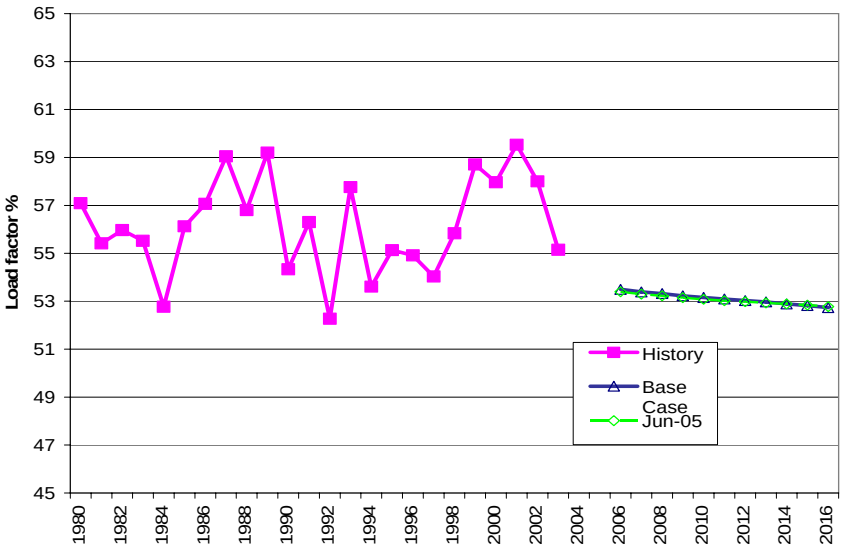


Figure 3-5 provides the load factors used in both the June 2005 forecast and revised forecasts. Each of the three revised scenarios has the same load factor. The load factor is a measure of the relative increase in peak demand with respect to annual electricity consumption. Lower load factors indicate more of a needle peak and higher load factors indicate a more stable load. Historical variation in load factors is caused in part by variation in annual weather patterns. In southern California, recent peak temperatures have been lower than the 54-year median value, resulting in higher-than-expected load factors. The projected load factors are in the range of recent values when the latter are adjusted for weather conditions; the projected load factor is perhaps best viewed relative to that of 1997, the only year in the past ten in which peak temperatures were closest to the historical median.

Over the forecast period the CED 2006 load factor declines slightly, which is consistent with higher weather-sensitive load growth in relation to baseload energy growth. Consumption in the SCE planning area is shifting toward residential and commercial sectors and away from the industrial sectors. Growth is also increasingly in hotter inland areas, leading to greater saturation of central air conditioning and greater use of air conditioning equipment compared with earlier concentrations in cooler coastal areas. Additionally, air conditioning loads are increasing along the coast as more households are installing air conditioning units for the few days they may be needed each year.

Figure 3-5: SCE Planning Area Load Factor



Sector Level Results and Input Assumptions

Residential

Figure 3-6 provides a comparison of the revised forecast ranges with the June 2005 SCE planning area residential forecast. The revised forecast ranges were produced by changing assumptions regarding household income and persons per household. Since the June 2005 forecast; the California Department of Finance (DOF) re-estimated interim population and persons-per-household size by county for the month of January, 2001 - 2005. These revised estimates were factored into the new baseline population and persons-per-household forecasts. A new higher June 2005 forecast of per-capita income from Economy.com was also incorporated into the new baseline forecast. The low forecast uses the new persons-per-household forecast with the December 2004 per-capita income forecast, while the high forecast uses the new per-capita income forecast with a constant persons-per-household projection, by county. For most counties in the SCE territory, persons per household is projected to increase in the baseline forecast; using a constant persons per household will therefore result in an increase in the number of households with fewer persons per household and lower household income.

Figure 3-6: SCE Planning Area Residential Consumption

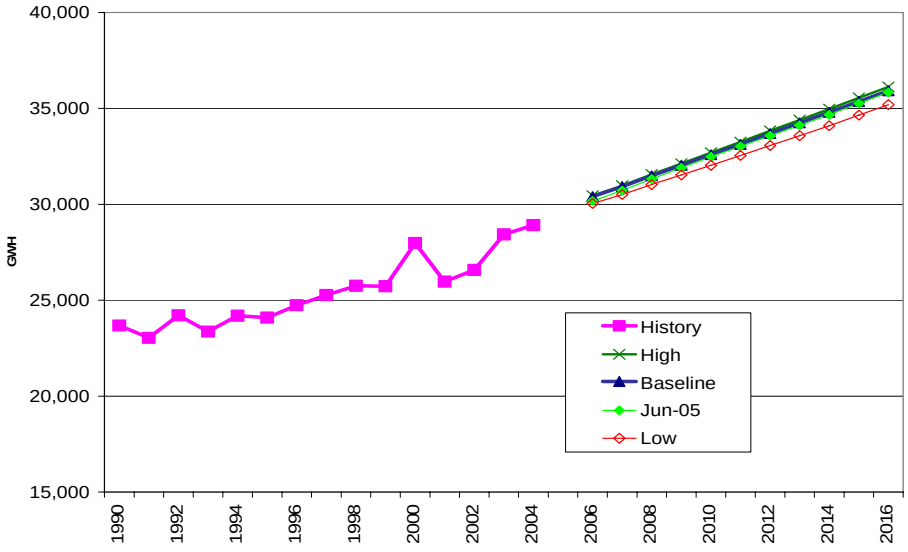
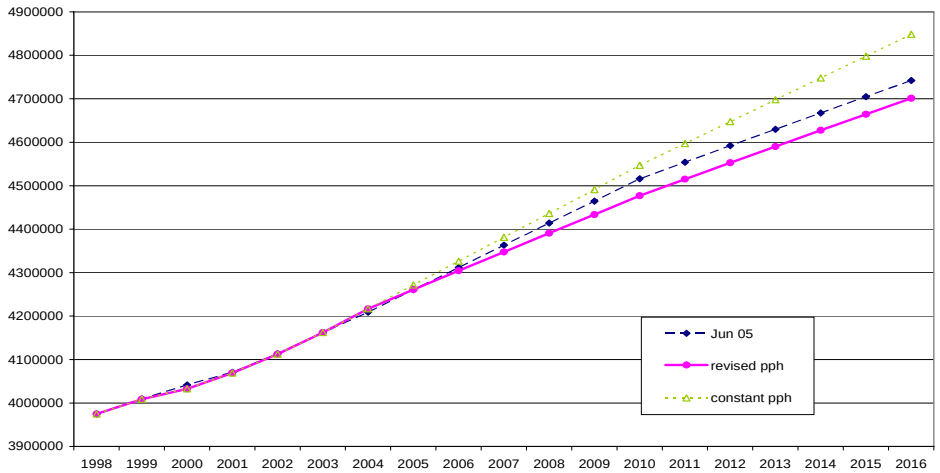


Figure 3-7 provides a comparison of household projections for the three scenarios.

Figure 3-7: SCE Planning Area Household Projections



Figures 3-8 and 3-9 provide comparisons of persons per household and household income for the cases used to develop the range of forecasts. In the SCE planning area, the newly revised DOF population and household estimates show continuing increases in persons per household at the county level. For the baseline forecast, this increase is projected to continue at approximately half of the rate of growth seen in the 1990 - 2004 time frame. For the high case, persons per household held constant at the county level 2004 value. Because of differential growth among counties in the SCE planning area, this results in a slight decline in persons per household over the forecast period. The total population forecast has not changed from the forecast used in the June 2005 forecast.

Figure 3-8: SCE Planning Area

Persons-per-Household Projections

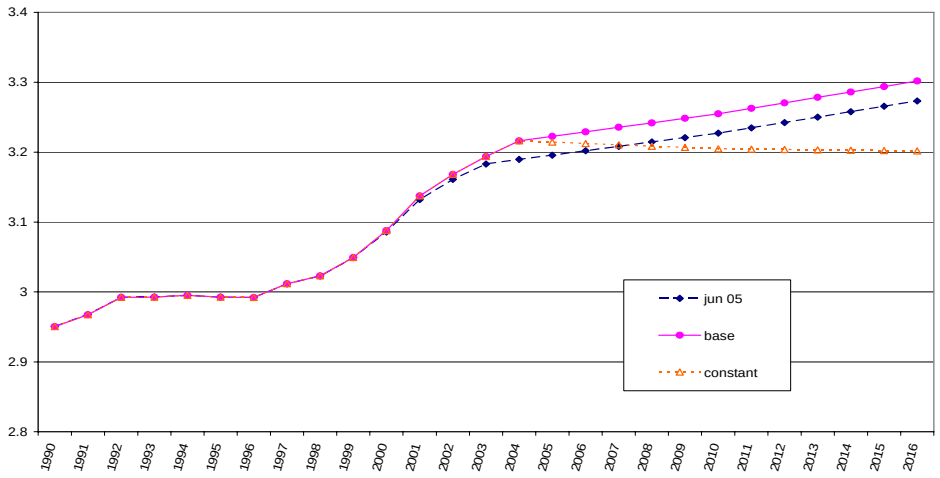


Figure 3-9 provides a comparison of household income for the forecast scenarios. Household income is derived from per-capita income and persons per household. The revised baseline, using revised per-capita income and persons per household estimates, is somewhat higher than in the June 2005 forecast.

Figure 3-9: SCE Planning Area Household Income Projections

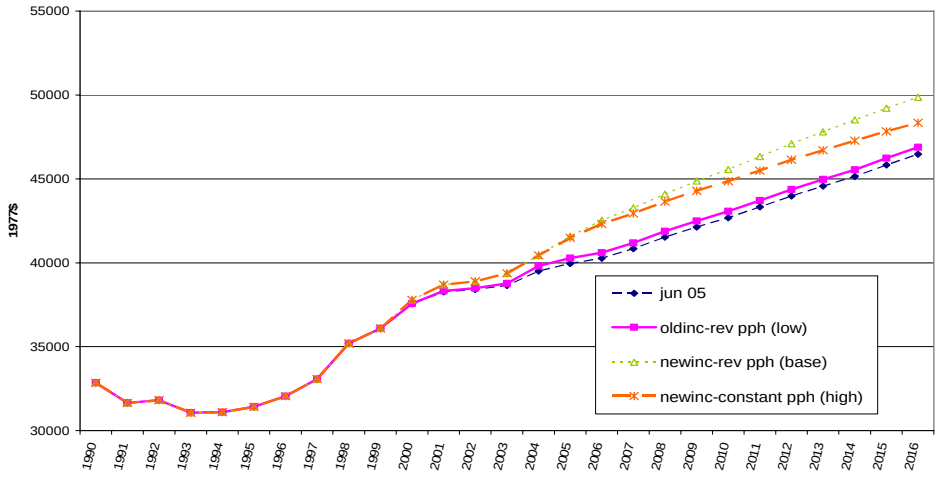
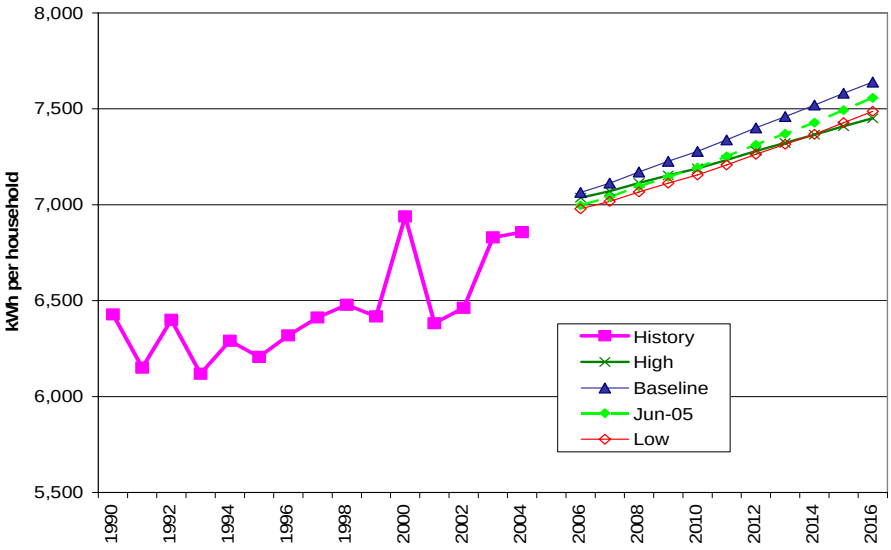


Figure 3-10 presents a comparison of use per household, as used in the scenarios. Use per household is a combined factor of total consumption and the total number of households. The base case use per household is higher than the other cases because of higher persons per household, resulting in higher household income.

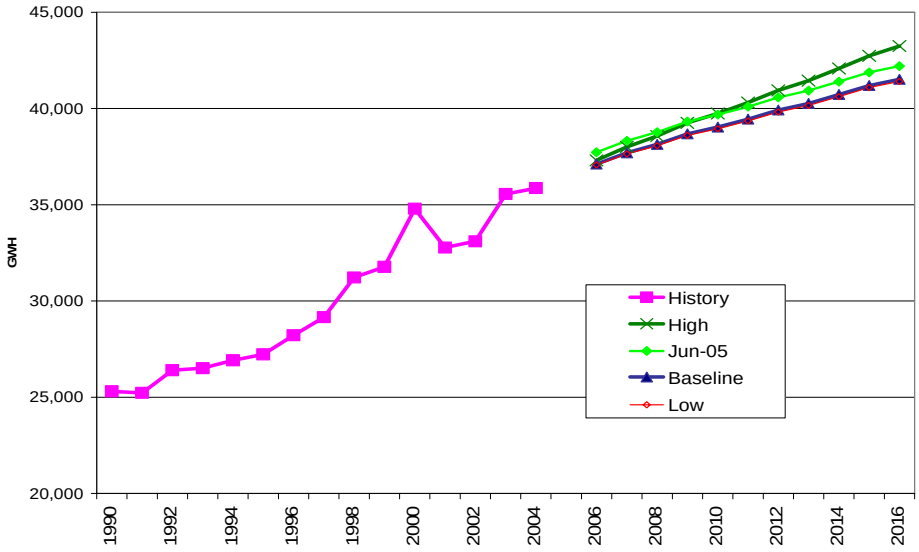
Figure 3-10: SCE Planning Area Use per Household



Commercial Building Sector

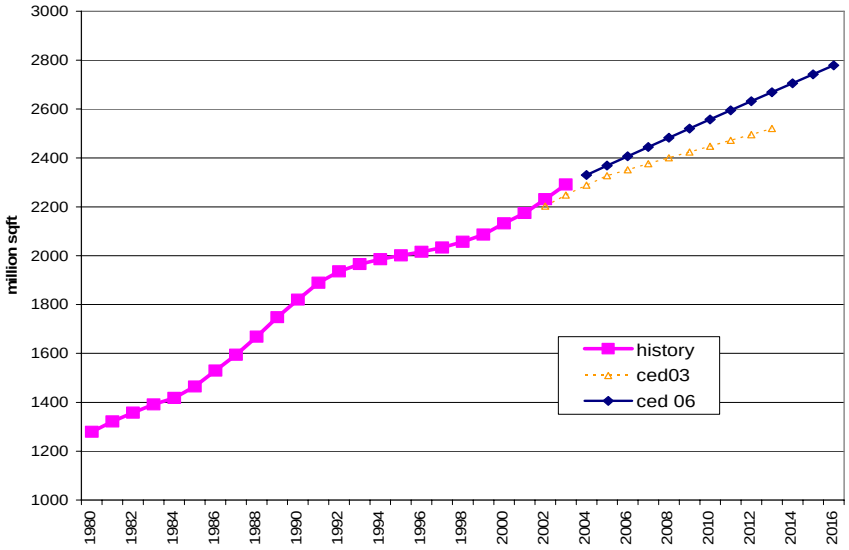
Figure 3-11 provides a comparison of the commercial building sector forecasts. The revised forecasts start at a slightly lower value than the June 2005 forecast due to inclusion of 2004 actual consumption data, which slightly lowers the starting forecast value. The high case reflects an assumption of constant use per square foot over the forecast period, while both the base and low cases project a decline in use per square foot over the forecast period - due to improved efficiency from building and appliance standards and technology improvements.

Figure 3-11: SCE Planning Area Commercial Consumption



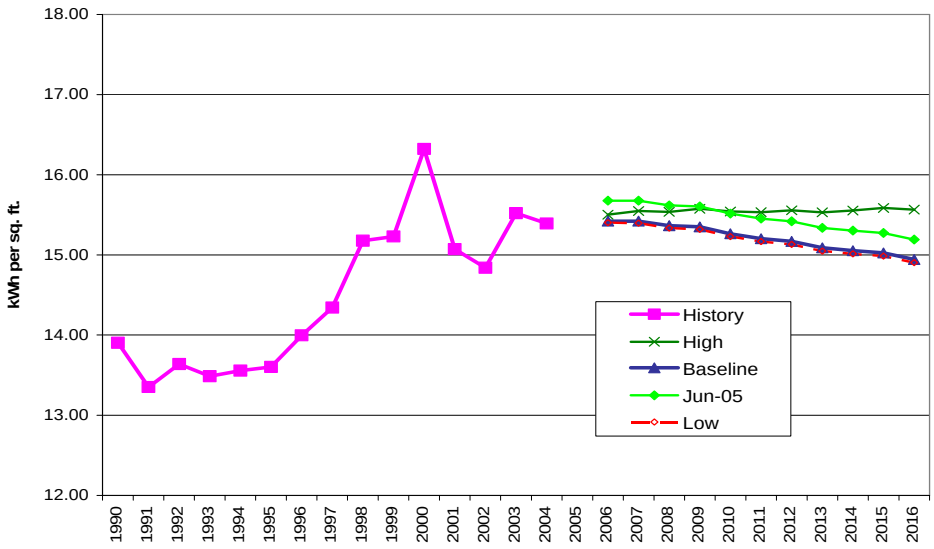
In staff's commercial building sector forecasting model, floor space by building type (e.g., retail, schools, and offices) is the key driver for energy consumption and peak demand. Figure 3-12 provides a comparison of total commercial floor space projections with those used in the CED 2003 forecast. Floor space projections were unchanged for the revised forecast scenarios.

Figure 3-12 SCE Planning Area Commercial Floor Space



In staff's commercial building sector forecasting model, floor space by building type (e.g., retail, schools, and offices) is the key driver for energy consumption and peak demand. Commercial floor space projections were not changed from those used in the June 2005 forecast. Figure 3-13 provides a comparison of use per square foot for the revised forecast scenarios and the June 2005 forecast. The lower starting values for the revised scenarios reflect inclusion of 2004 consumption estimates.

Figure 3-13: SCE Planning Area Commercial kWh per Square Foot



Industrial

Figure 3-14 provides comparisons of the SCE planning area industrial sector electricity consumption forecasts. The base case industrial consumption forecast starts from a higher value since it includes 2004 consumption, but increases at a lower rate than the June 2005 forecast because of an assumed decrease in kWh per unit of production. For the CED 2006 forecasts, staff has switched to industrial value added as an economic driver. The data provided by Economy.com allows evaluation of historical energy use and production relationships for each North American Industrial Classification System (NAICS) group, at a regional level. In response to comments at the Energy Commission workshop, staff evaluated the trends in energy use per output for each NAICS group, and revised the model efficiency trend coefficients to produce a forecast more consistent with historical trends.

Figure 3-14: SCE Planning Area Industrial Consumption

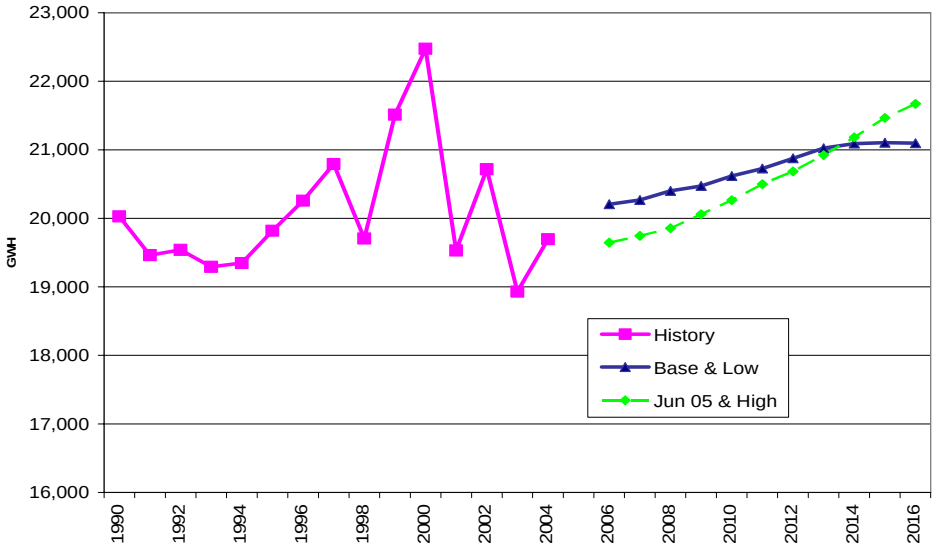
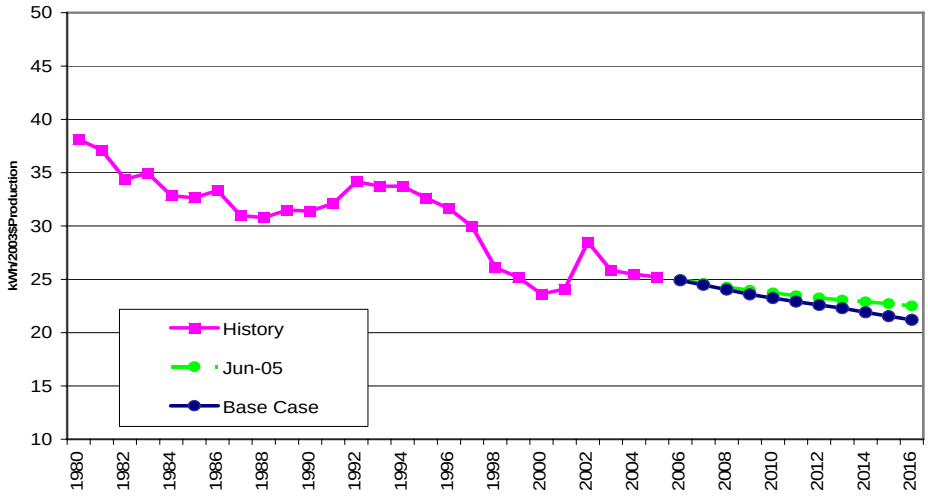


Figure 3-15 provides a comparison of electricity use per dollar of industrial production value between the June 2005 and revised forecasts. kWh per dollar of industrial value added in the base case forecast declines at 1.6 percent annually over the forecast period, compared with 1 percent in the June 2005 forecast. The revised forecast is comparable to the average annual decline from 1980-2004 of 1.67 percent. The effect of this change in modeling assumptions is a 3.3 percent reduction in industrial consumption by 2016.

Figure 3-15: SCE Planning Area Industrial Use per Production Unit



Other Sectors

Figures 3-18 and 3-19 provide comparisons of consumption forecasts for the remaining sectors. Figure 3-18 provides a comparison of the transportation and communication and utilities (TCU) sector forecasts. The revised starting value has changed due to inclusion of 2004 consumption data, but the growth rate of the two forecasts is unchanged.

Figure 3-18: SCE Planning Area Transportation, Communication and Utilities Sector Electricity Consumption

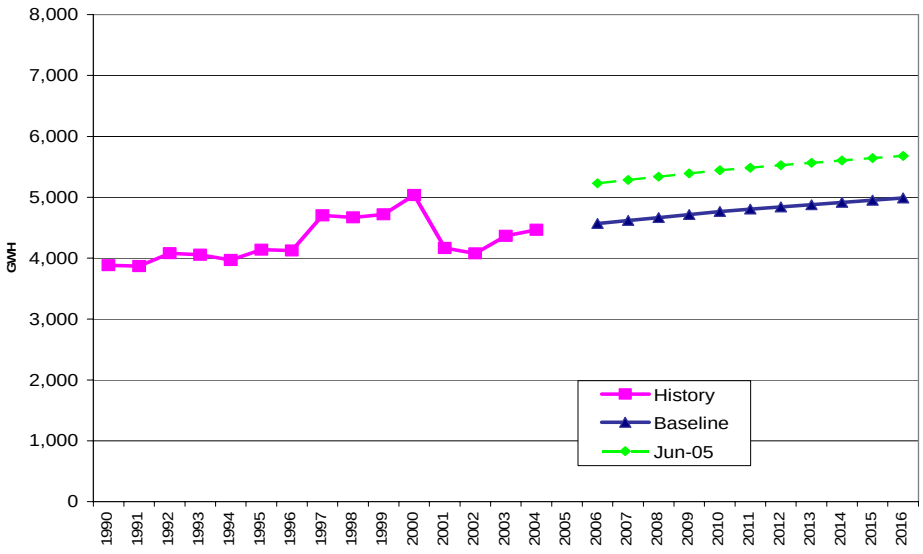


Figure 3-19 provides comparisons of the forecasts for the agriculture, water pumping, mining, and oil extraction sectors. The revised base case forecast for the agriculture and water pumping forecast is unchanged. The base case mining and oil extraction forecast is higher because of an increase in the historical starting point, and because of revisions to industrial model assumptions. At the Energy Commission's natural gas workshop, participants questioned whether thermally enhanced oil recovery (TEOR) gas use would decline, as in the staff forecast. The June 2005 forecast projected constant use per employee; however, in recent years, the trend has been increasing. This may reflect the effects of higher oil and gas prices on incentives to extract resources from wells with previously declining production, an incentive likely to continue under current resource price projections. As Figure 3-20 shows, the base case now assumes a continued increase in energy intensity.

Figure 3-19: SCE Planning Area Agriculture and Water Pumping and Mining and Oil Extraction Electricity Consumption Forecasts

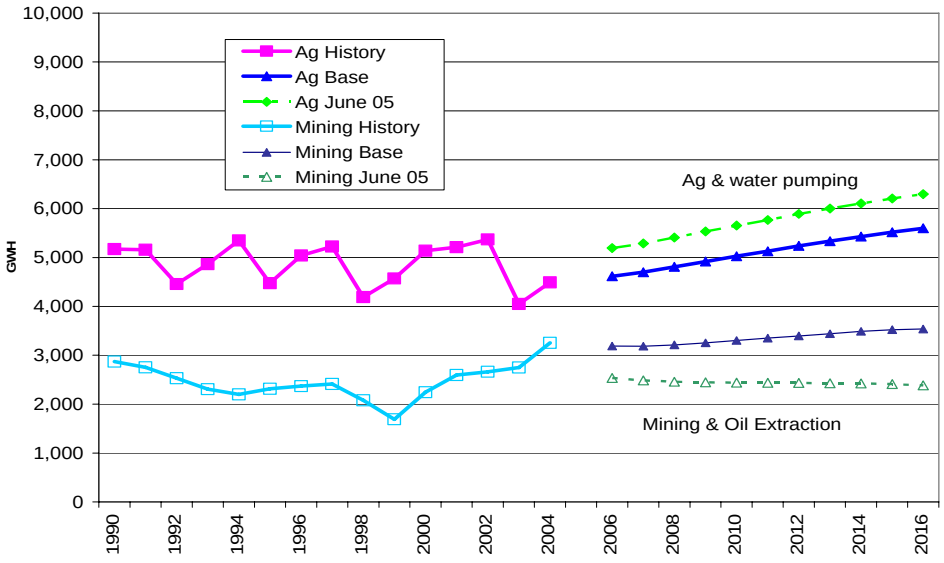
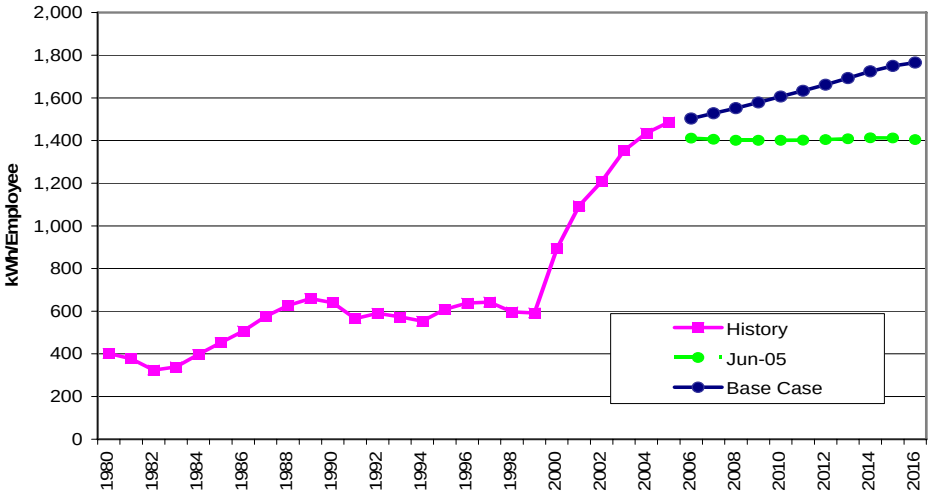


Figure 3-20: SCE Planning Area

Mining and Oil Extraction Use per Unit of Production



Disaggregated Forecast Results

Staff has disaggregated the planning area forecast into forecasts for most individual LSEs; direct access electricity service providers and very small publicly owned utilities are each forecast as a group. The growth rates in the SCE planning area

forecast were applied to each LSE's sector sales sector to develop a sales forecast. Sales by direct access providers were assumed to grow at half the sector growth rate to account for increases in use per customer and customers with direct access return rights.

To develop a peak forecast, the sector-level load factors for the SCE planning area were applied to the sector-level sales. To account for individual differences in weather sensitivity and customer mix, the results were then compared with historical peak and load factor data for each LSE, and load factors were adjusted to produce peak estimates more consistent with historical peaks. Table 2-3 shows the resulting projections.

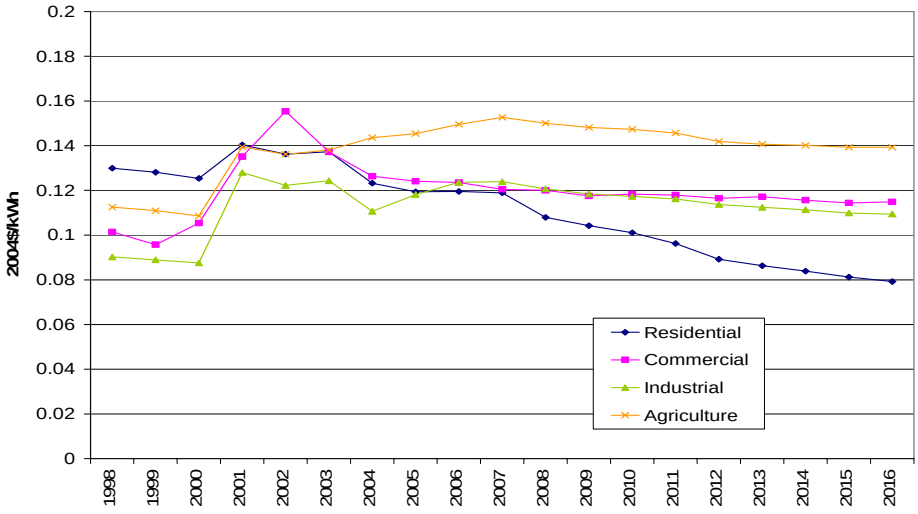
Table 2-3: SCE Planning Area LSE Forecast

	Annual Peak Demand (MW)					Annual Electricity Sales (gWh)				
	2004	2006	2009	2016	Average Annual Growth 2006-2016	2004	2006	2009	2016	Average Annual Growth 2006-2016
SCE Service Area	19,191	20,421	21,334	23,313	1.3%	84,504	87,481	90,925	98,406	1.3%
SCE Bundled	17,318	18,456	19,335	21,243	1.4%	73,093	75,916	79,203	86,381	1.4%
Direct Access	1,873	1,965	1,998	2,070	0.5%	11,410	11,566	11,722	12,025	0.4%
Anaheim	444	473	492	531	1.2%	2,599	2,685	2,782	2,980	1.1%
Riverside	374	399	418	456	1.3%	1,794	1,864	1,944	2,111	1.4%
Vernon	154	164	169	180	0.9%	1,190	1,222	1,245	1,294	0.7%
MWD	205	197	209	237	1.9%	1,508	1,551	1,652	1,880	1.9%
Other SCE POUs	178	190	198	216	1.3%	1,001	1,040	1,084	1,175	1.3%
Planning Area Total	20,546	21,844	22,820	24,934	1.3%	92,595	95,843	99,632	107,846	1.3%

Electricity Prices

Figure 3-21 shows the sector prices used in the CED 2006 forecast for the SCE planning area. These electricity prices are based on information provided by each of the LSEs in the planning area.[1] The planning area prices represent a weighted average of SCE service area, municipal utility, and ESP price projections, by customer class.

Figure 3-21: SCE Planning Area Prices



Uncertainty Introduced by Historical Data Inaccuracy

Pursuant to quarterly fuel and energy reporting (QFER) regulations, LSEs are required to report electricity consumption by sector to the Energy Commission. Recently, an increasing share of consumption has been reported as “unclassified” (see Figure 3-22). In the absence of additional information, this consumption is allocated to the industrial, commercial, and TCU sectors proportional to classified sales. If the actual sector distribution of unclassified electricity use is different from the distribution of properly classified electricity, the forecast will be adversely affected. For example, since commercial and industrial customers have substantially different load shapes, misclassifying consumption could result in erroneous estimations of sector consumption, peak demand, and growth rates.

Figure 3-22: SCE Planning Area Unclassified Sales

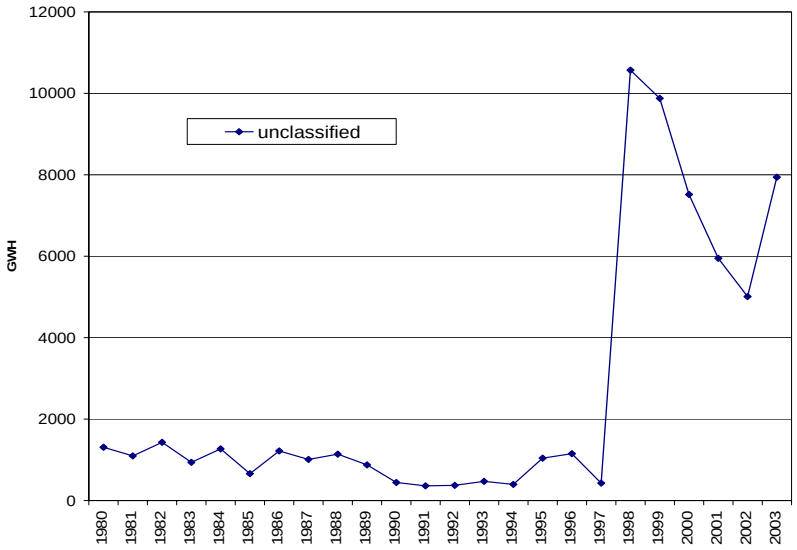
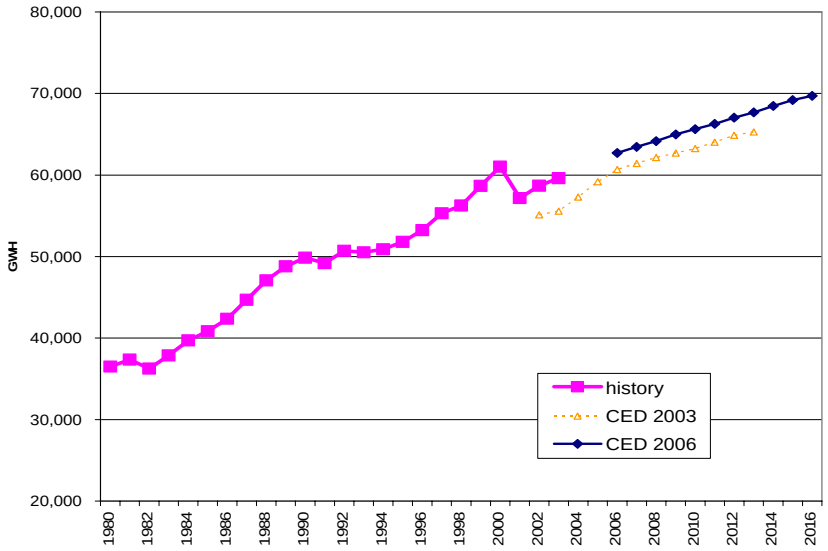


Figure 3-23 provides a comparison of the CED 2006 and CED 2003 forecasts at a more aggregated nonresidential level of detail. This figure indicates that there is much less of a “starting point difference” than at each sector-specific level of detail. Nevertheless, the staff believes that the failure to adequately classify an increasing share of consumption is a serious reporting problem. Accurate classification of consumption provides the foundation for implementation of efficiency and demand response programs, as well as for many other policy decisions. There needs to be a concerted effort on the part of all parties to provide accurate consumption information to create a shared understanding of how and where energy is being used.

Figure 3-23: SCE Planning Area Nonresidential Electricity (Commercial, Industrial, TCU, and Street Lighting)



[1] All LSEs with greater than 200MW peak demand were required to provide electricity price projections by customer sector pursuant to GENERAL INSTRUCTIONS: RETAIL ELECTRICITY PRICE FORECAST ELECTRICITY DATA REQUEST 2003-2016, adopted by California Energy Commissioner Order, November 3, 2004.

Form 1.1 - SCE Planning Area
Electricity Consumption by Sector (GWh)

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighting	Total Consumption
1980	16,965	16,799	16,893	2,681	3,496	2,174	637	59,644
1981	17,710	17,496	17,005	2,818	3,749	2,233	621	61,632
1982	17,389	17,086	15,971	2,628	3,226	2,497	707	59,504
1983	18,205	17,888	16,651	2,596	3,418	2,677	652	62,087
1984	19,395	19,126	17,131	2,988	4,611	2,834	618	66,704
1985	19,751	19,635	17,590	3,041	4,661	2,974	633	68,286
1986	19,877	20,678	17,925	2,771	4,618	3,148	618	69,635
1987	20,894	21,837	18,899	2,738	4,811	3,315	651	73,144
1988	22,124	22,927	20,072	2,776	4,861	3,490	595	76,843
1989	22,620	24,100	20,312	2,837	4,465	3,770	609	78,711
1990	23,684	25,308	20,028	2,871	5,173	3,884	632	81,579
1991	23,039	25,227	19,464	2,753	5,160	3,871	632	80,145
1992	24,210	26,398	19,539	2,530	4,456	4,080	678	81,890
1993	23,362	26,504	19,294	2,306	4,864	4,056	666	81,051
1994	24,190	26,916	19,347	2,198	5,348	3,969	659	82,628
1995	24,097	27,225	19,818	2,313	4,475	4,138	616	82,682
1996	24,738	28,219	20,257	2,370	5,042	4,125	633	85,384
1997	25,270	29,160	20,793	2,413	5,225	4,702	647	88,210
1998	25,749	31,220	19,705	2,078	4,191	4,669	677	88,288
1999	25,726	31,779	21,512	1,690	4,570	4,720	650	90,646
2000	27,980	33,627	21,835	2,207	5,105	4,893	673	96,319
2001	25,970	32,773	19,529	2,595	5,213	4,166	700	90,948
2002	26,586	33,149	20,740	2,662	5,369	4,084	706	93,297
2003	28,426	35,563	18,930	2,750	4,051	4,367	700	94,787
2004	28,916	35,864	19,695	3,252	4,491	4,467	704	97,389
2006	30,407	37,113	20,205	3,186	4,617	4,568	714	100,811
2007	30,922	37,700	20,268	3,186	4,700	4,618	719	102,113
2008	31,485	38,140	20,400	3,212	4,809	4,667	724	103,437
2009	32,037	38,685	20,471	3,253	4,918	4,716	728	104,809
2010	32,585	39,038	20,616	3,302	5,028	4,766	732	106,067
2011	33,131	39,449	20,725	3,351	5,128	4,804	735	107,323
2012	33,693	39,924	20,876	3,397	5,238	4,841	739	108,709
2013	34,241	40,267	21,024	3,442	5,337	4,878	742	109,931
2014	34,799	40,729	21,092	3,490	5,430	4,915	744	111,199
2015	35,363	41,201	21,103	3,523	5,519	4,951	747	112,407
2016	35,918	41,522	21,096	3,538	5,598	4,987	750	113,409
Annual Growth Rates (%)								
1980-1990	3.4	4.2	1.7	0.7	4.0	6.0	-0.1	3.2
1990-2000	1.7	2.9	0.9	-2.6	-0.1	2.3	0.6	1.7
2000-2004	0.8	1.6	-2.5	10.2	-3.2	-2.2	1.1	0.3
2004-2008	2.2	1.6	0.9	-0.3	1.7	1.1	0.7	1.5
2008-2016	1.7	1.1	0.4	1.2	1.9	0.8	0.4	1.2
2004-2016	1.8	1.2	0.6	0.7	1.9	0.9	0.5	1.3

Form 1.1a - SCE
Electricity Sales by Sector (GWh)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighting	Total Consumption
1980	16,965	16,774	16,629	2,681	3,496	2,174	637	59,355
1981	17,710	17,471	16,737	2,818	3,749	2,230	621	61,336
1982	17,389	17,060	15,628	2,603	3,226	2,398	707	59,013
1983	18,205	17,792	15,970	2,572	3,418	2,565	652	61,173
1984	19,395	19,004	16,413	2,842	4,610	2,718	618	65,600
1985	19,751	19,490	16,757	2,853	4,661	2,854	633	66,999
1986	19,877	20,516	16,967	2,582	4,618	3,028	618	68,207
1987	20,894	21,605	17,675	2,547	4,807	3,175	651	71,353
1988	22,124	22,609	17,739	2,574	4,852	3,331	595	73,825
1989	22,620	23,734	17,859	2,628	4,455	3,608	609	75,513
1990	23,684	24,852	17,571	2,650	5,163	3,719	632	78,271
1991	23,039	24,757	16,998	2,507	5,150	3,701	632	76,783
1992	24,210	25,897	17,062	2,282	4,446	3,907	678	78,482
1993	23,362	25,971	16,747	2,128	4,851	3,804	666	77,529
1994	24,190	26,378	16,782	2,015	5,336	3,709	659	79,069
1995	24,097	26,687	17,254	2,130	4,463	3,878	616	79,124
1996	24,738	27,681	17,663	2,186	5,029	3,865	633	81,795
1997	25,270	28,591	17,991	2,219	5,213	4,426	647	84,356
1998	25,749	30,651	16,937	1,880	4,179	4,401	677	84,473
1999	25,726	31,197	18,715	1,493	4,570	4,445	650	86,794
2000	27,980	34,231	19,741	2,042	5,140	4,762	674	94,570
2001	25,970	32,687	17,082	1,605	5,213	3,989	700	87,246
2002	26,577	32,951	17,548	1,487	5,369	3,813	706	88,452
2003	28,426	35,410	15,797	1,481	4,051	4,059	700	89,923
2004	28,916	35,712	16,607	2,001	4,491	4,164	704	92,595
2006	30,407	36,957	17,005	1,890	4,617	4,254	714	95,843
2007	30,922	37,541	17,012	1,867	4,700	4,298	719	97,058
2008	31,485	37,979	17,107	1,878	4,809	4,344	724	98,325
2009	32,037	38,522	17,137	1,901	4,918	4,389	728	99,632
2010	32,585	38,873	17,247	1,936	5,028	4,435	732	100,835
2011	33,131	39,282	17,321	1,971	5,128	4,469	735	102,038
2012	33,693	39,755	17,432	2,001	5,238	4,503	739	103,361
2013	34,241	40,096	17,546	2,032	5,337	4,536	742	104,530
2014	34,799	40,556	17,572	2,064	5,430	4,569	744	105,734
2015	35,363	41,026	17,546	2,082	5,519	4,602	747	106,886
2016	35,918	41,346	17,513	2,086	5,598	4,635	750	107,846
Annual Growth Rates (%)								
1980-1990	3.4	4.0	0.6	-0.1	4.0	5.5	-0.1	2.8
1990-2000	1.7	3.3	1.2	-2.6	0.0	2.5	0.7	1.9
2000-2004	0.8	1.1	-4.2	-0.5	-3.3	-3.3	1.1	-0.5
2004-2008	2.2	1.6	0.7	-1.6	1.7	1.1	0.7	1.5
2008-2016	1.7	1.1	0.3	1.3	1.9	0.8	0.4	1.2
2004-2016	1.8	1.2	0.4	0.3	1.9	0.9	0.5	1.3

Form 1.1b - SCE Planning Area
Electricity Sales by Sector (GWh)
High Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighting	Total Consumption
1980	16,965	16,774	16,629	2,681	3,496	2,174	637	59,355
1981	17,710	17,471	16,737	2,818	3,749	2,230	621	61,336
1982	17,389	17,060	15,628	2,603	3,226	2,398	707	59,013
1983	18,205	17,792	15,970	2,572	3,418	2,565	652	61,173
1984	19,395	19,004	16,413	2,842	4,610	2,718	618	65,600
1985	19,751	19,490	16,757	2,853	4,661	2,854	633	66,999
1986	19,877	20,516	16,967	2,582	4,618	3,028	618	68,207
1987	20,894	21,605	17,675	2,547	4,807	3,175	651	71,353
1988	22,124	22,609	17,739	2,574	4,852	3,331	595	73,825
1989	22,620	23,734	17,859	2,628	4,455	3,608	609	75,513
1990	23,684	24,852	17,571	2,650	5,163	3,719	632	78,271
1991	23,039	24,757	16,998	2,507	5,150	3,701	632	76,783
1992	24,210	25,897	17,062	2,282	4,446	3,907	678	78,482
1993	23,362	25,971	16,747	2,128	4,851	3,804	666	77,529
1994	24,190	26,378	16,782	2,015	5,336	3,709	659	79,069
1995	24,097	26,687	17,254	2,130	4,463	3,878	616	79,124
1996	24,738	27,681	17,663	2,186	5,029	3,865	633	81,795
1997	25,270	28,591	17,991	2,219	5,213	4,426	647	84,356
1998	25,749	30,651	16,937	1,880	4,179	4,401	677	84,473
1999	25,726	31,197	18,715	1,493	4,570	4,445	650	86,794
2000	27,980	34,231	19,741	2,042	5,140	4,762	674	94,570
2001	25,970	32,687	17,082	1,605	5,213	3,989	700	87,246
2002	26,577	32,951	17,548	1,487	5,369	3,813	706	88,452
2003	28,426	35,410	15,797	1,481	4,051	4,059	700	89,923
2004	28,916	35,712	16,607	2,001	4,491	4,164	704	92,595
2006	30,445	37,149	17,023	1,890	4,617	4,254	714	96,090
2007	30,977	37,849	17,080	1,867	4,700	4,298	719	97,489
2008	31,557	38,412	17,254	1,878	4,809	4,344	724	98,977
2009	32,126	39,090	17,422	1,901	4,918	4,389	728	100,574
2010	32,690	39,582	17,627	1,936	5,028	4,435	732	102,031
2011	33,253	40,141	17,780	1,971	5,128	4,469	735	103,478
2012	33,832	40,774	17,985	2,001	5,238	4,503	739	105,072
2013	34,396	41,279	18,217	2,032	5,337	4,536	742	106,539
2014	34,969	41,914	18,466	2,064	5,430	4,569	744	108,157
2015	35,551	42,567	18,639	2,082	5,519	4,602	747	109,706
2016	36,123	43,073	18,768	2,086	5,598	4,635	750	111,034
Annual Growth Rates (%)								
1980-1990	3.4	4.0	0.6	-0.1	4.0	5.5	-0.1	2.8
1990-2000	1.7	3.3	1.2	-2.6	0.0	2.5	0.7	1.9
2000-2004	0.8	1.1	-4.2	-0.5	-3.3	-3.3	1.1	-0.5
2004-2008	2.2	1.8	1.0	-1.6	1.7	1.1	0.7	1.7
2008-2016	1.7	1.4	1.1	1.3	1.9	0.8	0.4	1.4
2004-2016	1.9	1.6	1.0	0.3	1.9	0.9	0.5	1.5

Form 1.1c - SCE Planning Area
Electricity Sales by Sector (GWh)
Low Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighti ng	Total Consumption
1980	16,965	16,774	16,629	2,681	3,496	2,174	637	59,355
1981	17,710	17,471	16,737	2,818	3,749	2,230	621	61,336
1982	17,389	17,060	15,628	2,603	3,226	2,398	707	59,013
1983	18,205	17,792	15,970	2,572	3,418	2,565	652	61,173
1984	19,395	19,004	16,413	2,842	4,610	2,718	618	65,600
1985	19,751	19,490	16,757	2,853	4,661	2,854	633	66,999
1986	19,877	20,516	16,967	2,582	4,618	3,028	618	68,207
1987	20,894	21,605	17,675	2,547	4,807	3,175	651	71,353
1988	22,124	22,609	17,739	2,574	4,852	3,331	595	73,825
1989	22,620	23,734	17,859	2,628	4,455	3,608	609	75,513
1990	23,684	24,852	17,571	2,650	5,163	3,719	632	78,271
1991	23,039	24,757	16,998	2,507	5,150	3,701	632	76,783
1992	24,210	25,897	17,062	2,282	4,446	3,907	678	78,482
1993	23,362	25,971	16,747	2,128	4,851	3,804	666	77,529
1994	24,190	26,378	16,782	2,015	5,336	3,709	659	79,069
1995	24,097	26,687	17,254	2,130	4,463	3,878	616	79,124
1996	24,738	27,681	17,663	2,186	5,029	3,865	633	81,795
1997	25,270	28,591	17,991	2,219	5,213	4,426	647	84,356
1998	25,749	30,651	16,937	1,880	4,179	4,401	677	84,473
1999	25,726	31,197	18,715	1,493	4,570	4,445	650	86,794
2000	27,980	34,231	19,741	2,042	5,140	4,762	674	94,570
2001	25,970	32,687	17,082	1,605	5,213	3,989	700	87,246
2002	26,577	32,951	17,548	1,487	5,369	3,813	706	88,452
2003	28,426	35,410	15,797	1,481	4,051	4,059	700	89,923
2004	28,916	35,712	16,607	2,001	4,491	4,164	704	92,595
2006	30,039	36,911	17,005	1,890	4,617	4,254	714	95,429
2007	30,507	37,480	17,012	1,867	4,700	4,298	719	96,582
2008	31,028	37,907	17,107	1,878	4,809	4,344	724	97,797
2009	31,532	38,441	17,137	1,901	4,918	4,389	728	99,045
2010	32,036	38,784	17,247	1,936	5,028	4,435	732	100,197
2011	32,544	39,186	17,321	1,971	5,128	4,469	735	101,356
2012	33,067	39,655	17,432	2,001	5,238	4,503	739	102,634
2013	33,578	39,991	17,546	2,032	5,337	4,536	742	103,762
2014	34,093	40,448	17,572	2,064	5,430	4,569	744	104,920
2015	34,649	40,915	17,546	2,082	5,519	4,602	747	106,060
2016	35,199	41,232	17,513	2,086	5,598	4,635	750	107,014

Annual Growth Rates (%)

1980-1990	3.4	4.0	0.6	-0.1	4.0	5.5	-0.1	2.8
1990-2000	1.7	3.3	1.2	-2.6	0.0	2.5	0.7	1.9
2000-2004	0.8	1.1	-4.2	-0.5	-3.3	-3.3	1.1	-0.5
2004-2008	1.8	1.5	0.7	-1.6	1.7	1.1	0.7	1.4
2008-2016	1.6	1.1	0.3	1.3	1.9	0.8	0.4	1.1
2004-2016	1.7	1.2	0.4	0.3	1.9	0.9	0.5	1.2

Form 1.2 - SCE
Net Energy for Load (GWh)

	Total Consumption	Net Losses	Gross Generation	Private Supply	Net Energy for Load
1980	59,644	4,036	63,680	289	63,391
1981	61,632	4,171	65,803	296	65,507
1982	59,504	4,013	63,517	492	63,025
1983	62,087	4,160	66,247	914	65,333
1984	66,704	4,461	71,164	1,103	70,061
1985	68,286	4,556	72,842	1,286	71,555
1986	69,635	4,638	74,273	1,428	72,845
1987	73,144	4,852	77,996	1,790	76,205
1988	76,843	5,020	81,864	3,019	78,845
1989	78,711	5,135	83,846	3,199	80,648
1990	81,579	5,322	86,901	3,308	83,593
1991	80,145	5,221	85,367	3,362	82,005
1992	81,890	5,337	87,227	3,408	83,818
1993	81,051	5,272	86,323	3,522	82,801
1994	82,628	5,377	88,004	3,558	84,446
1995	82,682	5,380	88,063	3,558	84,505
1996	85,384	5,562	90,946	3,589	87,357
1997	88,210	5,736	93,947	3,854	90,092
1998	88,288	5,744	94,032	3,815	90,217
1999	90,646	5,902	96,548	3,851	92,696
2000	96,319	6,293	102,612	3,776	98,835
2001	90,948	5,933	96,881	3,701	93,179
2002	93,297	6,020	99,317	4,761	94,556
2003	94,787	6,115	100,902	4,864	96,038
2004	97,389	6,296	103,685	4,794	98,892
2006	100,811	6,517	107,328	4,968	102,360
2007	102,113	6,600	108,713	5,055	103,658
2008	103,437	6,686	110,123	5,112	105,011
2009	104,809	6,775	111,584	5,177	106,407
2010	106,067	6,857	112,923	5,232	107,692
2011	107,323	6,939	114,262	5,285	108,977
2012	108,709	7,029	115,737	5,348	110,390
2013	109,931	7,108	117,039	5,401	111,638
2014	111,199	7,190	118,389	5,464	112,924
2015	112,407	7,268	119,676	5,522	114,154
2016	113,409	7,334	120,743	5,563	115,180

Annual Growth Rates (%)

1980-1990	3.2	2.8	3.2	27.6	2.8
1990-2000	1.7	1.7	1.7	1.3	1.7
2000-2004	0.3	0.0	0.3	6.1	0.0
2004-2008	1.5	1.5	1.5	1.6	1.5
2008-2016	1.2	1.2	1.2	1.1	1.2
2004-2016	1.3	1.3	1.3	1.2	1.3

Form 1.4a - SCE Planning Area
Peak Demand (MW)
Base Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	11,829	895	12,724	48	12,676	57.1
1981	12,592	953	13,545	50	13,495	55.4
1982	12,029	908	12,937	83	12,854	56.0
1983	12,638	949	13,587	153	13,433	55.5
1984	14,271	1,071	15,342	185	15,157	52.8
1985	13,743	1,028	14,771	216	14,555	56.1
1986	13,783	1,029	14,812	240	14,572	57.1
1987	13,993	1,041	15,034	301	14,734	59.0
1988	15,234	1,119	16,353	507	15,846	56.8
1989	14,991	1,098	16,089	537	15,552	59.2
1990	16,879	1,241	18,119	555	17,564	54.3
1991	16,017	1,174	17,191	564	16,627	56.3
1992	17,585	1,293	18,878	572	18,306	52.3
1993	15,799	1,156	16,955	591	16,364	57.8
1994	17,311	1,270	18,581	597	17,983	53.6
1995	16,860	1,236	18,095	597	17,498	55.1
1996	17,480	1,283	18,763	602	18,160	54.9
1997	18,338	1,344	19,682	647	19,035	54.0
1998	19,104	1,403	20,507	640	19,867	51.8
1999	18,356	1,346	19,702	647	19,056	55.5
2000	18,724	1,375	20,099	634	19,465	59.2
2001	17,227	1,262	18,489	621	17,868	59.5
2002	18,096	1,315	19,410	799	18,611	57.9
2003	19,318	1,406	20,724	817	19,907	55.1
2004	19,900	1,451	21,351	805	20,546	54.9
2006	21,135	1,543	22,678	834	21,844	53.5
2007	21,446	1,565	23,012	849	22,163	53.4
2008	21,753	1,588	23,341	858	22,483	53.3
2009	22,077	1,612	23,689	869	22,820	53.2
2010	22,372	1,634	24,006	878	23,128	53.2
2011	22,664	1,655	24,319	887	23,432	53.1
2012	22,981	1,678	24,660	898	23,762	53.0
2013	23,267	1,699	24,966	907	24,059	53.0
2014	23,568	1,721	25,290	917	24,372	52.9
2015	23,857	1,743	25,600	927	24,673	52.8
2016	24,107	1,761	25,868	934	24,934	52.7

Annual Growth Rates (%)

1990-2000	1.0	1.0	1.0	1.3	1.0	0.9
2000-2001	-8.0	-8.2	-8.0	-2.0	-8.2	0.5
2000-2004	1.5	1.4	1.5	6.1	1.4	-1.9
2004-2008	2.3	2.3	2.3	1.6	2.3	-0.7
2008-2016	1.3	1.3	1.3	1.1	1.3	-0.1
2004-2016	1.6	1.6	1.6	1.2	1.6	-0.3

Form 1.4b - SCE Planning Area
Peak Demand (MW)
High Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	11,829	895	12,724	48	12,676	57.1
1981	12,592	953	13,545	50	13,495	55.4
1982	12,029	908	12,937	83	12,854	56.0
1983	12,638	949	13,587	153	13,433	55.5
1984	14,271	1,071	15,342	185	15,157	52.8
1985	13,743	1,028	14,771	216	14,555	56.1
1986	13,783	1,029	14,812	240	14,572	57.1
1987	13,993	1,041	15,034	301	14,734	59.0
1988	15,234	1,119	16,353	507	15,846	56.8
1989	14,991	1,098	16,089	537	15,552	59.2
1990	16,879	1,241	18,119	555	17,564	54.3
1991	16,017	1,174	17,191	564	16,627	56.3
1992	17,585	1,293	18,878	572	18,306	52.3
1993	15,799	1,156	16,955	591	16,364	57.8
1994	17,311	1,270	18,581	597	17,983	53.6
1995	16,860	1,236	18,095	597	17,498	55.1
1996	17,480	1,283	18,763	602	18,160	54.9
1997	18,338	1,344	19,682	647	19,035	54.0
1998	19,104	1,403	20,507	640	19,867	51.8
1999	18,356	1,346	19,702	647	19,056	55.5
2000	19,090	1,403	20,493	634	19,859	58.1
2001	17,227	1,262	18,489	621	17,868	59.5
2002	18,080	1,313	19,393	799	18,594	58.0
2003	19,291	1,404	20,695	817	19,879	55.2
2004	19,669	1,434	21,102	805	20,297	55.6
2006	21,188	1,547	22,735	834	21,901	53.5
2007	21,536	1,572	23,108	849	22,259	53.4
2008	21,885	1,598	23,483	858	22,624	53.3
2009	22,261	1,626	23,887	869	23,018	53.3
2010	22,603	1,651	24,255	878	23,376	53.2
2011	22,942	1,676	24,619	887	23,731	53.2
2012	23,311	1,703	25,014	898	24,116	53.1
2013	23,651	1,729	25,380	907	24,473	53.1
2014	24,025	1,756	25,781	917	24,864	53.0
2015	24,385	1,783	26,168	927	25,241	53.0
2016	24,701	1,806	26,507	934	25,573	52.9
Annual Growth Rates (%)						
1990-2000	1.2	1.2	1.2	1.3	1.2	0.7
2000-2001	-9.8	-10.0	-9.8	-2.0	-10.0	2.5
2000-2004	0.7	0.5	0.7	6.1	0.5	-1.1
2004-2008	2.7	2.8	2.7	1.6	2.8	-1.0
2008-2016	1.5	1.5	1.5	1.1	1.5	-0.1
2004-2016	1.9	1.9	1.9	1.2	1.9	-0.4

Form 1.4c - SCE Planning Area
Peak Demand (MW)
Low Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	11,829	895	12,724	48	12,676	57.1
1981	12,592	953	13,545	50	13,495	55.4
1982	12,029	908	12,937	83	12,854	56.0
1983	12,638	949	13,587	153	13,433	55.5
1984	14,271	1,071	15,342	185	15,157	52.8
1985	13,743	1,028	14,771	216	14,555	56.1
1986	13,783	1,029	14,812	240	14,572	57.1
1987	13,993	1,041	15,034	301	14,734	59.0
1988	15,234	1,119	16,353	507	15,846	56.8
1989	14,991	1,098	16,089	537	15,552	59.2
1990	16,879	1,241	18,119	555	17,564	54.3
1991	16,017	1,174	17,191	564	16,627	56.3
1992	17,585	1,293	18,878	572	18,306	52.3
1993	15,799	1,156	16,955	591	16,364	57.8
1994	17,311	1,270	18,581	597	17,983	53.6
1995	16,860	1,236	18,095	597	17,498	55.1
1996	17,480	1,283	18,763	602	18,160	54.9
1997	18,338	1,344	19,682	647	19,035	54.0
1998	19,104	1,403	20,507	640	19,867	51.8
1999	18,356	1,346	19,702	647	19,056	55.5
2000	19,090	1,403	20,493	634	19,859	58.1
2001	17,227	1,262	18,489	621	17,868	59.5
2002	18,080	1,313	19,393	799	18,594	58.0
2003	19,291	1,404	20,695	817	19,879	55.2
2004	19,669	1,434	21,102	805	20,297	55.6
2006	21,021	1,534	22,556	834	21,722	53.6
2007	21,316	1,556	22,871	849	22,023	53.5
2008	21,609	1,577	23,186	858	22,328	53.4
2009	21,917	1,600	23,516	869	22,647	53.3
2010	22,198	1,620	23,818	878	22,940	53.3
2011	22,477	1,641	24,118	887	23,231	53.2
2012	22,782	1,663	24,445	898	23,547	53.1
2013	23,056	1,683	24,739	907	23,832	53.1
2014	23,344	1,704	25,049	917	24,131	53.0
2015	23,630	1,725	25,356	927	24,429	52.9
2016	23,878	1,744	25,621	934	24,688	52.8
Annual Growth Rates (%)						
1990-2000	1.2	1.2	1.2	1.3	1.2	0.7
2000-2001	-9.8	-10.0	-9.8	-2.0	-10.0	2.5
2000-2004	0.7	0.5	0.7	6.1	0.5	-1.1
2004-2008	2.4	2.4	2.4	1.6	2.4	-1.0
2008-2016	1.3	1.3	1.3	1.1	1.3	-0.1
2004-2016	1.6	1.6	1.6	1.2	1.6	-0.4

Form 1.5 - SCE Planning Area
Noncoincident Peak Demand Temperature Scenarios

Year	1-in-2 Temperatures	1-in-5 Temperatures	1-in-10 Temperatures	1-in-20 Temperatures	1-in-5 Multiplier	1-in-10 Multiplier	1-in-20 Multiplier
2006	21,844	22,791	23,372	23,768	1.043	1.070	1.088
2007	22,163	23,124	23,713	24,115	1.043	1.070	1.088
2008	22,483	23,458	24,056	24,464	1.043	1.070	1.088
2009	22,820	23,809	24,416	24,830	1.043	1.070	1.088
2010	23,128	24,130	24,745	25,165	1.043	1.070	1.088
2011	23,432	24,448	25,071	25,496	1.043	1.070	1.088
2012	23,762	24,792	25,424	25,855	1.043	1.070	1.088
2013	24,059	25,102	25,742	26,178	1.043	1.070	1.088
2014	24,372	25,429	26,077	26,519	1.043	1.070	1.088
2015	24,673	25,742	26,399	26,846	1.043	1.070	1.088
2016	24,934	26,014	26,678	27,130	1.043	1.070	1.088

Form 1.7a - SCE
Private Supply by Sector (GWh)

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighting	Total Consumption
1980	0	25	264	0	0	0	0	289
1981	0	25	268	0	0	3	0	296
1982	0	25	343	24	0	99	0	492
1983	0	96	681	24	1	112	0	914
1984	0	122	718	147	1	116	0	1,103
1985	0	144	834	188	1	120	0	1,286
1986	0	162	958	188	1	120	0	1,428
1987	0	232	1,224	191	4	140	0	1,790
1988	0	317	2,333	202	9	158	0	3,019
1989	0	365	2,453	209	9	162	0	3,199
1990	0	455	2,457	221	10	165	0	3,308
1991	0	470	2,466	246	10	170	0	3,362
1992	0	501	2,477	247	10	173	0	3,408
1993	0	533	2,547	177	13	252	0	3,522
1994	0	538	2,564	183	13	260	0	3,558
1995	0	538	2,564	183	13	260	0	3,558
1996	0	538	2,595	183	13	260	0	3,589
1997	0	569	2,802	194	13	276	0	3,854
1998	0	570	2,767	198	13	268	0	3,815
1999	0	582	2,797	198	0	275	0	3,851
2000	0	565	2,734	204	0	273	0	3,776
2001	0	87	2,447	991	0	177	0	3,701
2002	0	152	3,167	1,176	0	266	0	4,761
2003	0	154	3,133	1,270	0	308	0	4,864
2004	0	151	3,088	1,251	0	303	0	4,794
2006	0	157	3,200	1,297	0	314	0	4,968
2007	0	160	3,256	1,320	0	320	0	5,055
2008	0	161	3,293	1,334	0	323	0	5,112
2009	0	163	3,335	1,352	0	328	0	5,177
2010	0	165	3,370	1,366	0	331	0	5,232
2011	0	167	3,404	1,380	0	334	0	5,285
2012	0	169	3,444	1,396	0	338	0	5,348
2013	0	171	3,479	1,410	0	342	0	5,401
2014	0	173	3,520	1,426	0	346	0	5,464
2015	0	174	3,557	1,441	0	349	0	5,522
2016	0	176	3,583	1,452	0	352	0	5,563

Annual Growth Rates (%)

1980-1990	33.7	25.0			27.6
1990-2000	2.2	1.1	-0.8	5.2	1.3
2000-2004	-28.1	3.1	57.4	2.7	6.1
2004-2008	1.6	1.6	1.6	1.6	1.6
2008-2016	1.1	1.1	1.1	1.1	1.1
2004-2016	1.2	1.2	1.2	1.2	1.2

Form 1.8
SCE Service Area and Bundled Customer Forecasts

Forecasts for SCE Bundled Customers

	Peak Demand (MW)			Net Energy for Load (GWh)		
	Low	Base	High	Low	Base	High
1999	17,033	17,033	17,033	74,106	74,106	74,106
2000	17,918	17,563	17,918	81,667	81,667	81,667
2001	16,009	16,009	16,009	79,934	79,934	79,934
2002	15,299	15,313	15,299	73,115	73,115	73,115
2003	16,497	16,521	16,497	75,419	75,419	75,419
2004	17,108	17,318	17,108	78,064	78,064	78,064
2006	18,340	18,456	18,506	80,663	81,078	81,302
2007	18,612	18,745	18,829	81,729	82,205	82,591
2008	18,886	19,033	19,156	82,850	83,377	83,957
2009	19,171	19,335	19,506	84,003	84,589	85,421
2010	19,434	19,612	19,827	85,067	85,703	86,758
2011	19,697	19,888	20,146	86,141	86,822	88,092
2012	19,981	20,184	20,490	87,319	88,045	89,554
2013	20,237	20,452	20,808	88,365	89,132	90,901
2014	20,504	20,733	21,155	89,444	90,258	92,385
2015	20,773	21,005	21,492	90,516	91,342	93,815
2016	21,009	21,243	21,791	91,423	92,254	95,048
Annual Growth Rate (%)						
2006-2016	1.4%	1.4%	1.6%	1.3%	1.3%	1.6%

Forecasts for SCE Service Area (Including Direct Access)

	Peak Demand (MW)			Net Energy for Load (GWh)		
	Low	Base	High	Low	Base	High
1999	588	17,751	17,621	83,525	83,525	83,525
2000	18,192	18,192	18,487	91,605	91,605	91,605
2001	16,952	16,952	16,605	83,827	83,827	83,827
2002	17,714	17,714	17,228	85,076	85,076	85,076
2003	17,564	17,564	18,542	87,777	87,777	87,777
2004	17,636	17,636	18,959	90,250	90,250	90,250
2006	18,577	18,643	20,474	93,011	93,430	93,673
2007	18,840	18,914	20,809	94,130	94,611	95,033
2008	19,073	19,152	21,151	95,306	95,840	96,476
2009	19,311	19,398	21,518	96,515	97,108	98,027
2010	19,583	19,675	21,853	97,630	98,274	99,439
2011	19,893	19,989	22,185	98,755	99,444	100,847
2012	20,156	20,256	22,545	99,993	100,727	102,394
2013	20,448	20,552	22,878	101,087	101,863	103,819
2014	20,676	20,785	23,243	102,213	103,036	105,394
2015	20,923	21,037	23,596	103,325	104,159	106,903
2016	21,169	21,288	23,908	104,257	105,097	108,197
Annual Growth Rate (%)						
2006-2016	1.3%	1.3%	1.6%	1.1%	1.2%	1.5%

Form 1.9
SCE Planning Area Forecasts by Load Serving Entity (LSE)

Peak Demand (MW) by LSE - Base Case

	SCE Service Area	SCE Bundled	Direct Access	Anaheim	Riverside	Vernon	MWD	Other SCE POUs	Planning Area Total
1999	17,621	17,033	588	449	341	158	331	157	19,056
2000	18,121	17,563	558	425	339	138	286	156	19,465
2001	16,605	16,009	596	397	340	121	253	151	17,868
2002	17,243	15,313	1,930	432	338	143	292	162	18,611
2003	18,569	16,521	2,047	436	357	158	215	173	19,907
2004	19,191	17,318	1,873	444	374	154	205	178	20,546
2005	20,106	18,148	1,958	467	393	162	195	187	21,510
2006	20,421	18,456	1,965	473	399	164	197	190	21,844
2007	20,720	18,745	1,975	480	406	166	200	192	22,163
2008	21,019	19,033	1,986	486	411	167	205	195	22,483
2009	21,334	19,335	1,998	492	418	169	209	198	22,820
2010	21,621	19,612	2,009	498	423	171	214	201	23,128
2011	21,906	19,888	2,019	503	429	172	218	203	23,432
2012	22,215	20,184	2,031	510	435	174	223	206	23,762
2013	22,493	20,452	2,041	515	440	176	227	209	24,059
2014	22,786	20,733	2,053	521	445	178	231	211	24,372
2015	23,068	21,005	2,063	527	451	179	234	214	24,673
2016	23,313	21,243	2,070	531	456	180	237	216	24,934
Annual Growth Rate (%)									
2006-2016	1.4%	1.5%	0.5%	1.2%	1.4%	1.0%	1.9%	1.4%	1.4%

Electricity Sales by LSE (GWH) - Base Case

	Service area	SCE Bundled	SCE DA	Anaheim	Riverside	Vernon	MWD	Other POUS	Planning Area Total
1999	78,207	69,388	8,819	2,531	1,623	1,161	2,389	884	86,794
2000	85,772	76,468	9,304	2,605	1,704	1,188	2,367	933	94,570
2001	78,490	74,845	3,645	2,513	1,712	1,133	2,484	915	87,246
2002	79,659	68,459	11,200	2,588	1,663	1,123	2,470	948	88,452
2003	82,188	70,617	11,571	2,501	1,727	1,157	1,362	988	89,923
2004	84,504	73,093	11,410	2,599	1,794	1,190	1,508	1,001	92,595
2005	86,396	74,880	11,516	2,653	1,836	1,214	1,525	1,025	94,649
2006	87,481	75,916	11,566	2,685	1,864	1,222	1,551	1,040	95,843
2007	88,587	76,971	11,616	2,718	1,891	1,229	1,579	1,054	97,058
2008	89,738	78,069	11,669	2,749	1,916	1,238	1,615	1,069	98,325
2009	90,925	79,203	11,722	2,782	1,944	1,245	1,652	1,084	99,632
2010	92,017	80,246	11,771	2,811	1,967	1,255	1,689	1,097	100,835
2011	93,112	81,294	11,818	2,840	1,991	1,263	1,723	1,110	102,038
2012	94,314	82,440	11,874	2,873	2,018	1,273	1,760	1,125	103,361
2013	95,377	83,457	11,920	2,900	2,040	1,282	1,793	1,138	104,530
2014	96,476	84,511	11,964	2,930	2,065	1,288	1,824	1,151	105,734
2015	97,527	85,526	12,001	2,958	2,091	1,292	1,854	1,164	106,886
2016	98,406	86,381	12,025	2,980	2,111	1,294	1,880	1,175	107,846
Annual Growth Rate (%)									
2006-2016	1.3%	1.5%	0.5%	1.2%	1.4%	0.8%	1.9%	1.4%	1.3%

Form 2.2 - SCE Planning Area
Planning Area Economic and Demographic Assumptions

Year	Population	Households - Base & Low	Households - High	Per Capita Income - Low (2003$)	Per Capita Income - Base (2003$)	Per Capita Income - HIgh (2003$)	Industrial Value Added (Millions 2003$)	Commercial Floorspace (MM Sqft.)
1980	8,412,107	2,990,891	2,990,891	26,837	26,837	26,837	44,313	1,280
1981	8,495,370	3,022,888	3,022,888	27,376	27,376	27,376	45,822	1,321
1982	8,631,588	3,043,302	3,043,302	27,162	27,162	27,162	46,420	1,358
1983	8,906,493	3,097,401	3,097,401	27,776	27,776	27,776	47,651	1,391
1984	9,173,113	3,173,513	3,173,513	29,735	29,735	29,735	52,157	1,417
1985	9,464,443	3,261,174	3,261,174	30,721	30,721	30,721	53,873	1,464
1986	9,823,553	3,374,894	3,374,894	31,459	31,459	31,459	53,773	1,530
1987	10,116,086	3,460,239	3,460,239	32,160	32,160	32,160	60,996	1,594
1988	10,431,689	3,558,959	3,558,959	32,423	32,423	32,423	65,220	1,669
1989	10,711,993	3,643,297	3,643,297	32,508	32,508	32,508	64,515	1,748
1990	10,871,384	3,684,754	3,684,754	32,848	32,848	32,848	63,780	1,820
1991	11,115,660	3,745,874	3,745,874	31,654	31,654	31,654	60,597	1,889
1992	11,318,991	3,782,870	3,782,870	31,814	31,814	31,814	57,205	1,935
1993	11,426,320	3,818,173	3,818,173	31,068	31,068	31,068	57,189	1,965
1994	11,518,482	3,845,669	3,845,669	31,093	31,093	31,093	57,357	1,986
1995	11,618,948	3,882,579	3,882,579	31,423	31,423	31,423	60,748	2,002
1996	11,714,299	3,915,245	3,915,245	32,056	32,056	32,056	64,068	2,016
1997	11,870,406	3,941,090	3,941,090	33,072	33,072	33,072	69,417	2,033
1998	12,014,711	3,974,485	3,974,485	35,197	35,197	35,197	75,496	2,057
1999	12,223,716	4,008,797	4,008,797	36,090	36,090	36,090	85,440	2,087
2000	12,470,547	4,032,493	4,032,493	37,573	37,794	37,794	92,379	2,132
2001	12,749,973	4,069,014	4,069,014	38,329	38,698	38,698	81,107	2,174
2002	13,002,664	4,112,789	4,112,789	38,493	38,894	38,894	72,775	2,231
2003	13,247,564	4,162,122	4,162,122	38,769	39,371	39,371	73,367	2,291
2004	13,424,505	4,217,047	4,217,047	39,814	40,437	40,437	75,343	2,330
2005	13,615,470	4,260,698	4,271,775	40,280	41,592	41,484	77,593	2,368
2006	13,806,387	4,304,221	4,326,603	40,603	42,535	42,314	79,068	2,407
2007	13,997,252	4,347,519	4,381,428	41,185	43,270	42,934	80,689	2,445
2008	14,188,058	4,390,579	4,436,247	41,882	44,098	43,640	82,694	2,482
2009	14,378,809	4,433,406	4,491,061	42,500	44,871	44,292	84,567	2,520
2010	14,573,009	4,477,131	4,547,002	43,068	45,568	44,865	86,425	2,558
2011	14,731,092	4,515,000	4,597,225	43,717	46,332	45,499	88,160	2,595
2012	14,889,166	4,552,669	4,647,450	44,367	47,099	46,135	90,018	2,632
2013	15,047,242	4,590,139	4,697,675	44,968	47,806	46,705	91,929	2,669
2014	15,205,305	4,627,411	4,747,899	45,550	48,512	47,273	93,780	2,706
2015	15,363,357	4,664,487	4,798,124	46,236	49,213	47,834	95,433	2,742
2016	15,521,399	4,701,368	4,848,352	46,886	49,862	48,345	96,952	2,778

Annual Growth Rates (%)

1990-2000	1.4	0.9	0.9	1.4	1.4	1.4	3.8	1.6
2000-2001	2.2	0.9	0.9	2.0	2.4	2.4	-12.2	2.0
2000-2004	1.9	1.1	1.1	1.5	1.7	1.7	-5.0	2.2
2004-2008	1.4	1.0	1.3	1.3	2.2	1.9	2.4	1.6
2008-2016	1.1	0.9	1.1	1.4	1.5	1.3	2.0	1.4
2004-2016	1.2	0.9	1.2	1.4	1.8	1.5	2.1	1.5

Form 2.3a - SCE Planning Area
Electricity Rate Forecast (2003 cents/kwh)

	GDP Implicit Price Deflator	Staff Residential	Staff Commercial	Staff Industrial	Agriculture
1990	75.49	14.21	12.94	9.61	12.14
1991	78.13	14.90	13.55	9.60	12.29
1992	79.92	15.17	13.42	9.32	12.54
1993	81.77	14.81	12.39	8.53	12.70
1994	83.51	14.78	12.39	8.58	12.59
1995	85.22	15.12	12.13	8.43	12.88
1996	86.83	14.70	11.18	9.28	11.06
1997	88.28	14.45	10.74	9.12	11.38
1998	89.26	13.00	10.15	9.02	11.25
1999	90.54	12.81	9.57	8.90	11.09
2000	92.52	12.54	10.54	8.75	10.86
2001	94.74	14.03	13.51	12.80	13.95
2002	96.31	13.63	15.54	12.22	13.62
2003	98.07	13.73	13.72	12.43	13.80
2004	100.00	12.32	12.63	11.06	14.36
2005	101.51	11.94	12.41	11.82	14.54
2006	103.64	11.95	12.35	12.36	14.96
2007	105.58	11.89	12.05	12.39	15.27
2008	107.36	10.79	12.00	12.07	15.01
2009	109.26	10.42	11.76	11.84	14.82
2010	111.24	10.11	11.84	11.73	14.73
2011	113.25	9.62	11.79	11.62	14.57
2012	115.23	8.92	11.65	11.37	14.18
2013	117.23	8.63	11.72	11.24	14.07
2014	119.25	8.38	11.57	11.13	14.01
2015	121.31	8.13	11.44	10.99	13.93
2016	123.42	7.92	11.49	10.94	13.93

Annual Growth Rates (%)					
1990-2000	2.1	-1.2	-2.0	-0.9	-1.1
2000-2001	2.4	11.9	28.2	46.2	28.4
2000-2003	2.0	3.1	9.2	12.4	8.3
2003-2008	1.8	-4.7	-2.6	-0.6	1.7
2008-2016	1.8	-3.8	-0.5	-1.2	-0.9
2003-2016	1.8	-4.1	-1.4	-1.0	0.1

CHAPTER 4

SDG&E PLANNING AREA

The San Diego Gas & Electric planning area includes (1) SDG&E bundled retail customers, (2) customers served by various energy service providers (ESPs) using the SDG&E distribution system to deliver electricity to end-users, and (3) customers served by the City of Escondido.

This chapter is organized in a fashion similar to those for the other planning areas. First, the revised forecast ranges of consumption are discussed and compared to the June 2005 forecast. The forecasted load factor, jointly determined by the consumption and peak load estimates, is presented. Second, the ranges of sector consumption forecasts are presented. Third, the baseline forecast disaggregated by LSE within the SDG&E planning area is presented. Fourth, sector electricity prices used as inputs are presented. Finally, implications of potential inaccuracy of historical data, which has yet to be resolved, are discussed.

Forecast Results

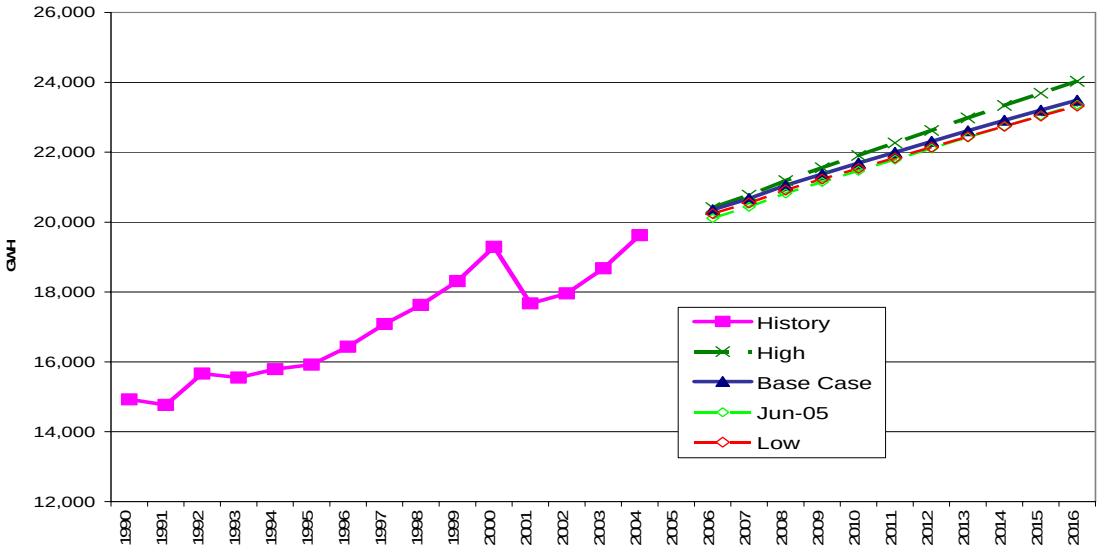
Table 4-1 presents a comparison of the planning area electricity consumption and peak demand forecasts for selected years. The base forecast is slightly higher than June because of higher-than-forecast consumption in 2004, but has a lower growth rate because of reduced industrial growth.

Table 4-1: SDG&E Planning Area Forecast Comparison

Consumption (GWH)						
	Jun-05	Low	Base	High	Percent Difference Base/Jun-05	Percent Difference High/Low
1990	14,926	14,926	14,926	14,926	0.00%	0.00%
2000	19,295	19,295	19,295	19,295	0.00%	0.00%
2004	19,469	19,627	19,627	19,627	0.81%	0.00%
2008	20,820	20,917	21,051	21,186	1.11%	1.29%
2016	23,355	23,323	23,490	24,033	0.58%	3.05%
Annual Average Growth Rates						
1990-2000	2.60%	2.60%	2.60%	2.60%		
2000-2004	0.22%	0.43%	0.43%	0.43%		
2004-2008	1.69%	1.60%	1.77%	1.93%		
2004-2016	1.53%	1.45%	1.51%	1.70%		
Peak (MW)						
	Jun-05	Low	Base	High	Percent Difference Base/Jun-05	Percent Difference High/Low
1990	2,961	2,837	2,837	2,837	-4.21%	0.00%
2000	3,472	3,404	3,404	3,404	-1.97%	0.00%
2004	4,070	4,121	4,121	4,121	1.26%	0.00%
2008	4,350	4,422	4,451	4,481	2.32%	1.33%
2016	4,879	4,933	4,970	5,088	1.87%	3.14%
Annual Average Growth Rates						
1990-2000	1.60%	1.84%	1.84%	1.84%		
2000-2004	4.05%	4.90%	4.90%	4.90%		
2004-2008	1.68%	1.78%	1.95%	2.11%		
2004-2016	1.52%	1.51%	1.57%	1.77%		
Historic values are shaded						

As shown in Figure 4-1, the base is only slightly higher than the low case, while greater commercial and industrial growth in the high case produces a three percent increase in consumption by 2016.

Figure 4-1: SDG&E Planning Area Electricity Forecast



The differences between the peak forecast cases, shown in Figure 4-2, parallel the energy forecasts.

Figure 4-2: SDG&E Planning Area Peak

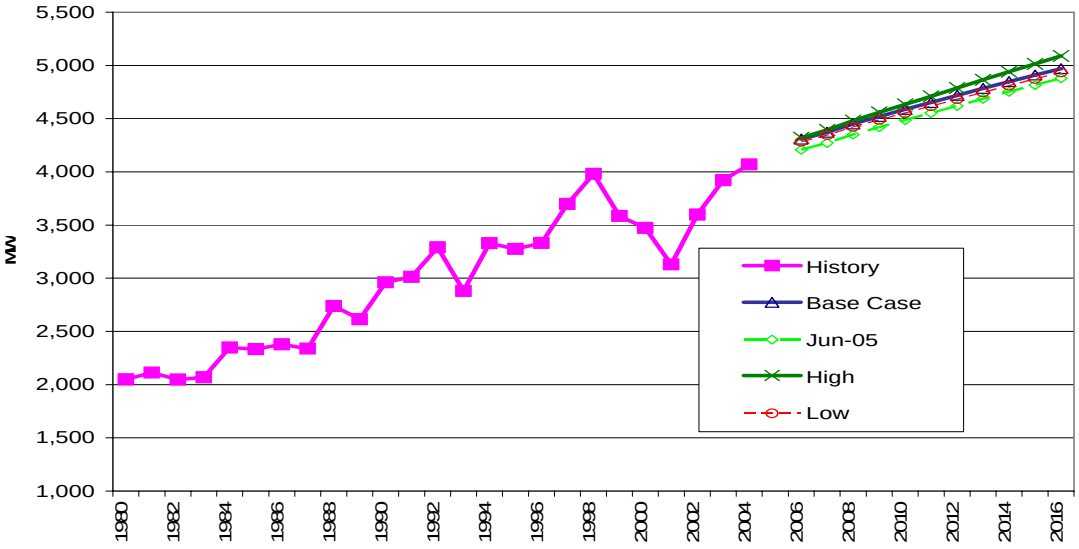
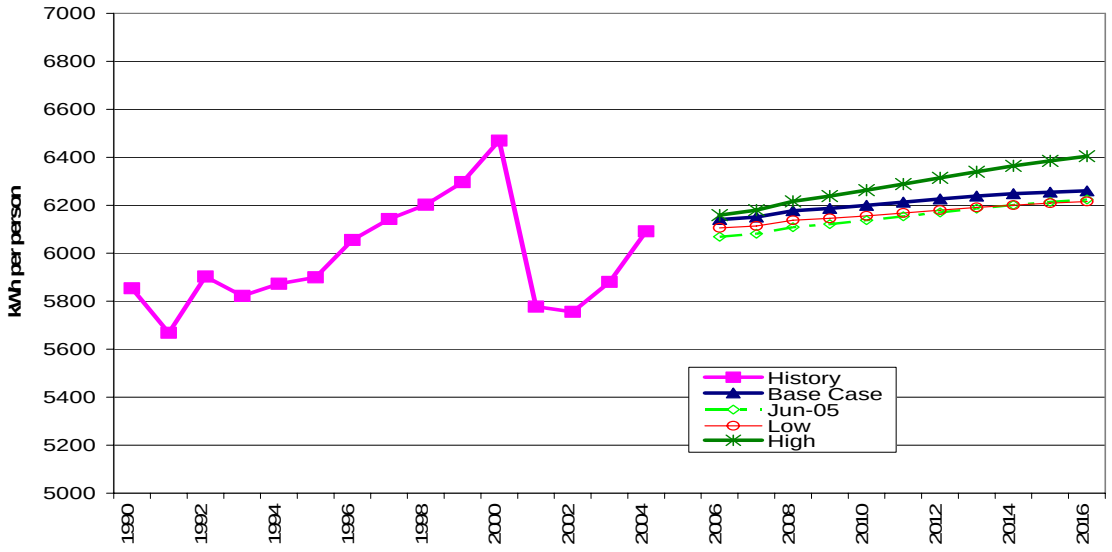


Figure 4-3 provides a comparison of forecasted per capita electricity consumption.

Figure 4-3: SDG&E Planning Area Per Capita Electricity Consumption



Base case per capita peak demand, shown in Figure 4-4, is higher in the early years of the forecast because of the adjustments made to residential load shapes. In the high case, peak per capita returns to pre- electricity crisis levels.

Figure 4-4: SDG&E Planning Area Per Capita Peak Demand

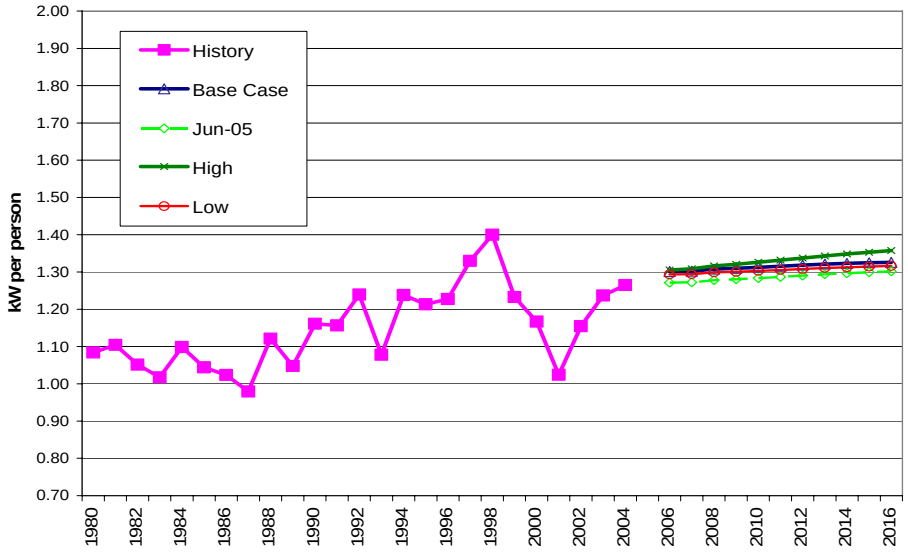
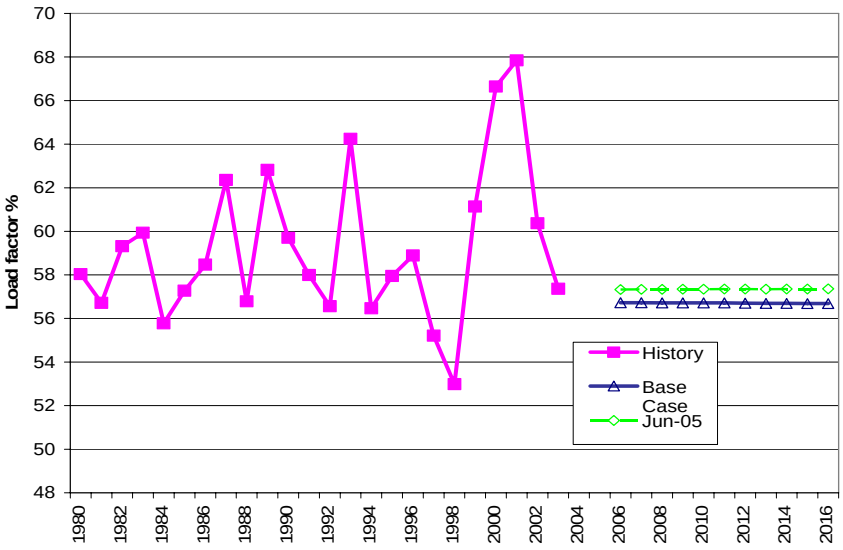


Figure 4-5 provides a comparison of the respective forecast load factors. High load factors observed since 1998 are a product of lower-than-average peak temperatures and reaction to the energy crisis. The projected load factor, based on higher, 1 in 2 peak temperatures, and a return to normal air conditioning use patterns, should be lower than these recent values. The forecasted load factor is relatively constant, reflecting the historic pattern.

Figure 4-5: SDG&E Planning Area Peak Load Factor



Sector Level Results and Input Assumptions

Residential

Figure 4-6 provides a comparison between the revised forecast ranges and June SDG&E planning area residential forecasts. As in the previous planning area forecasts, the revised forecast ranges were produced by changing assumptions regarding household income and persons per household projections.

Figure 4-6: SDG&E Planning Area Residential Consumption

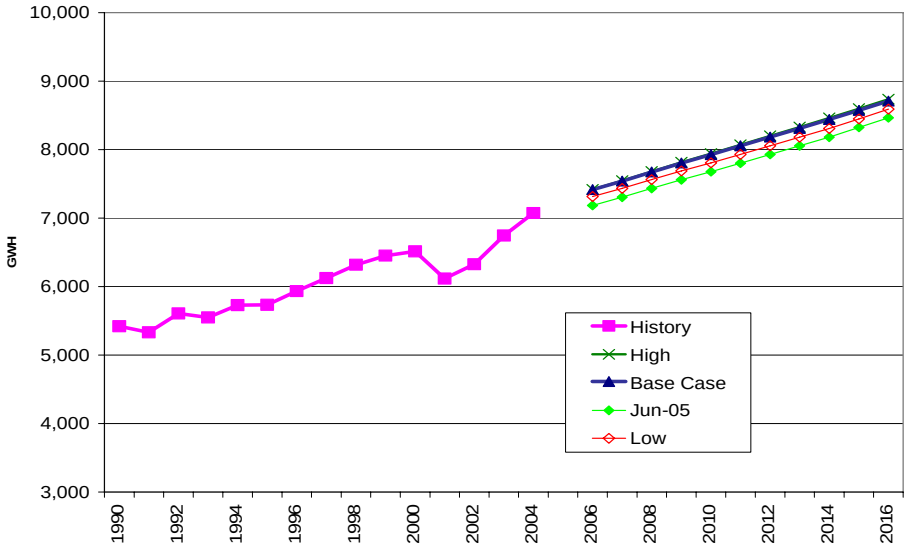
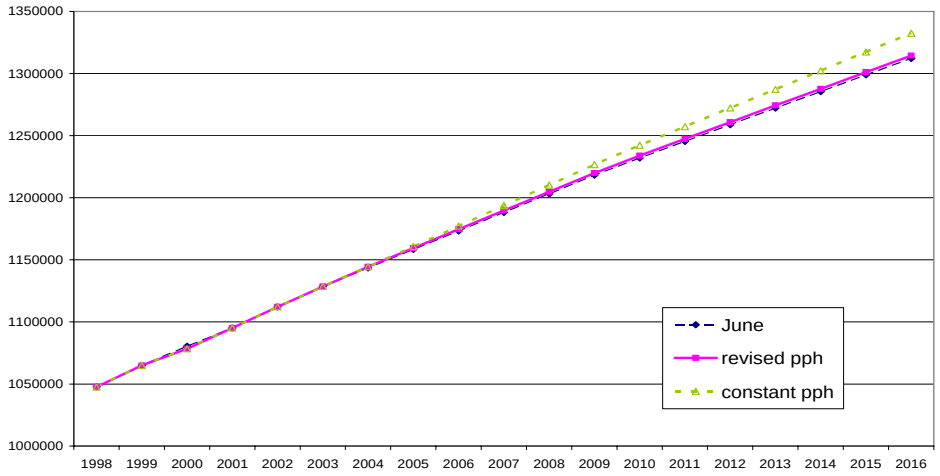


Figure 4-7 provides a comparison of household projections for the scenarios and the June 2005 forecast. The revised household projection is based on recent revisions to historic persons per household estimates. The constant household projection is based on holding persons per household constant at the 2004 level for the entire forecast period.

Figure 4-7: SDG&E Planning Area Household Projections



Figures 4-8 and 4-9 provide comparisons of persons per household and household income for the cases used to develop the range of forecasts. For the revised baseline forecast, the growth in persons per household has dropped to a slightly lower level due to the inclusion of the revised DOF county level population and household information.

Figure 4-8: SDG&E Planning Area Residential Demographic Projections

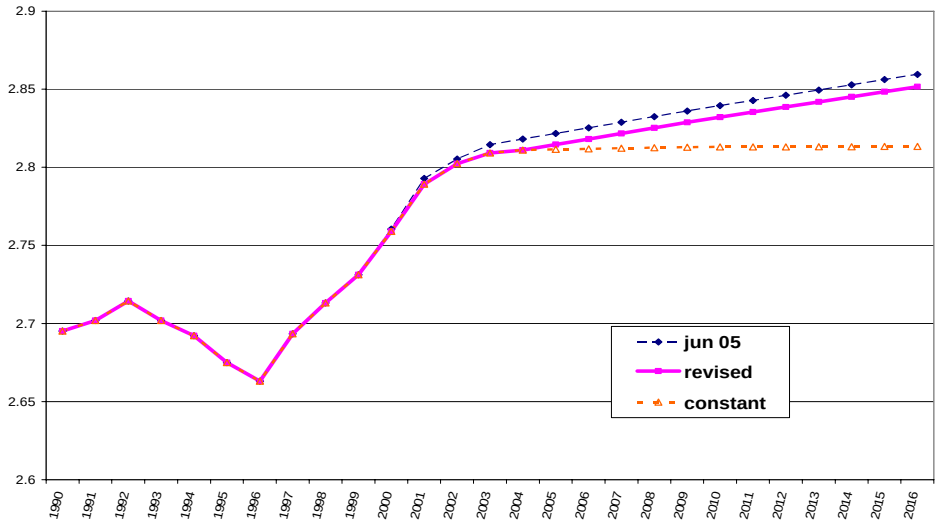


Figure 4-9 provides a comparison of household income for the forecast scenarios. Household income is derived as the product of per capita income and persons per household. The revised baseline is somewhat higher that the June 2005 forecast.

Figure 4-9: SDG&E Planning Area Household Income Projections

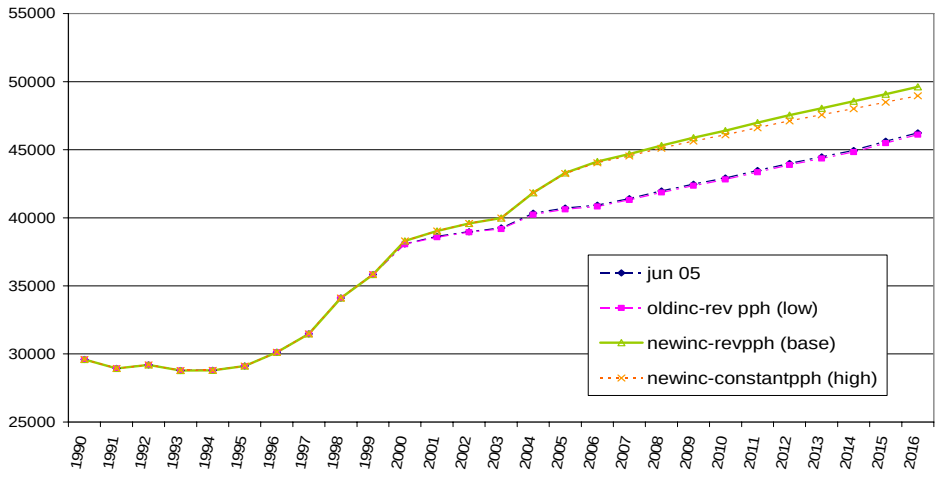
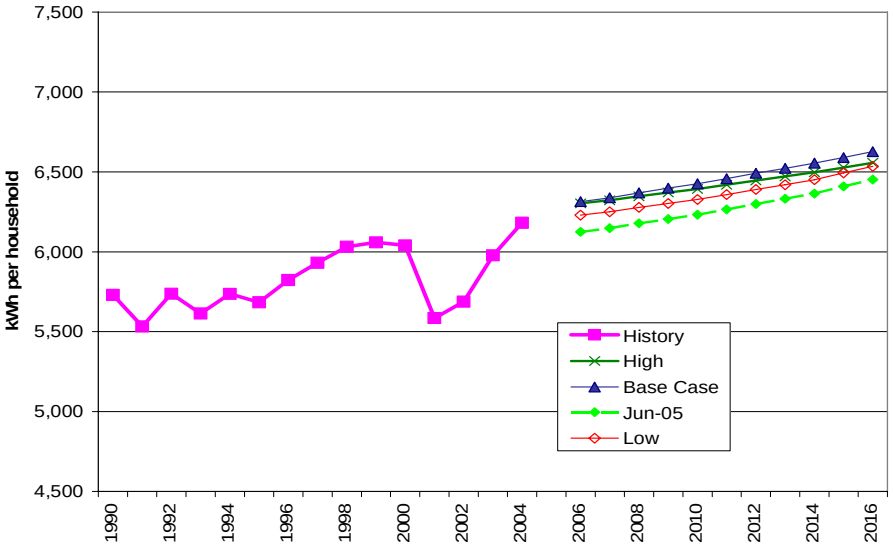


Figure 4-10 presents a comparison of forecasted use per household for each of the scenarios as well as the June 2005 forecasted values. Use per household is a factor of total consumption and total number of households. The baseline use per household is slightly higher than the other cases due to higher persons per household and household income.

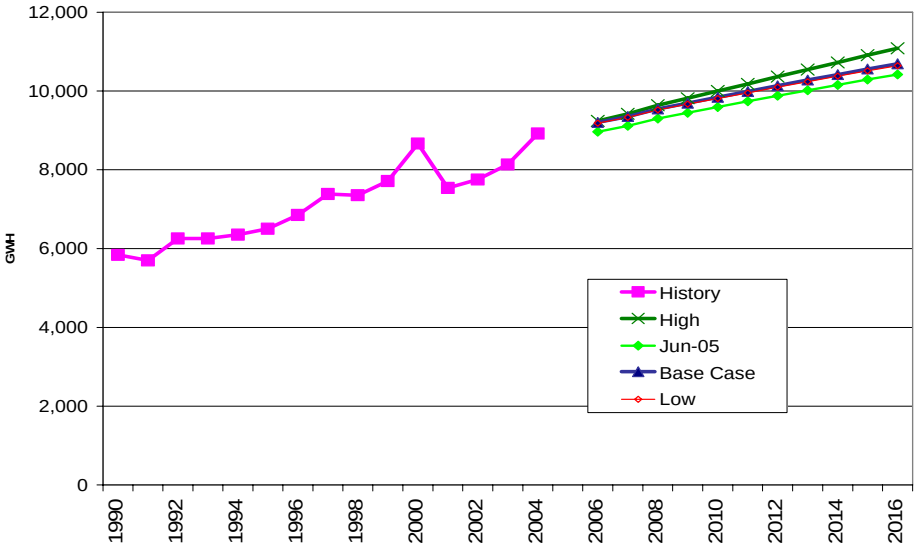
Figure 4-10: SDG&E Planning Area Use per Household



Commercial Building Sector

Figures 4-11 provides a comparison of the commercial building sector forecasts. The high case reflects an assumption of constant use per square foot over the forecast period while both the base and low cases project a decline in use per square foot due to improved efficiency brought about by building and appliance standards and technology improvements.

Figure 4-11: SDG&E Planning Area Commercial Consumption



In staff's commercial building sector forecasting model, floorspace by building type (e.g. retail, schools, offices, etc.) is the key driver of energy use for each specific

building type. Figure 4-12 provides comparison of total commercial floorspace projections to those used in the CED 2003 forecast. Floorspace projections were unchanged for the revised forecast scenarios.

Figure 4-12: SDG&E Planning Area Commercial Floorspace

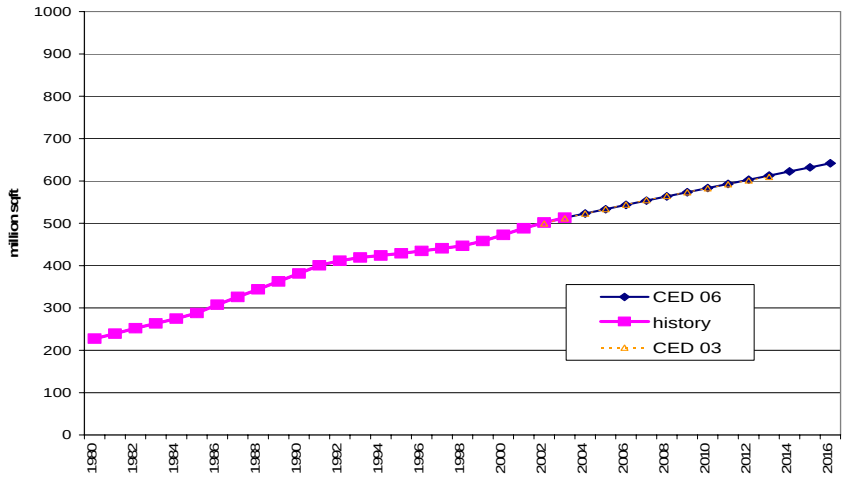


Figure 4-13 provides a comparison of kWh consumption per square foot of floorspace. In the base case, projected use per square foot is higher over the entire period, since actual 2004 consumption levels were up and the floorspace projections are identical. As in the June forecast, use per square foot declines in the base case. In the high case, the reduced effects of standards and more growth in office equipment serves to increase use per square foot.

Figure 4-13: SDG&E Planning Area Commercial kWh per Sq. Ft.

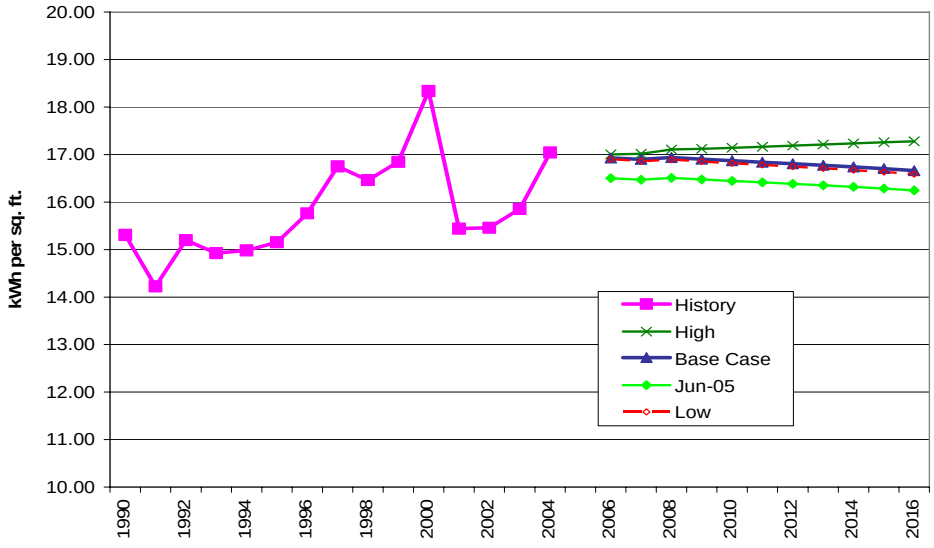


Figure 4-14 provides a comparison of the industrial sector electricity consumption forecasts for the SDG&E planning area. The base case industrial forecast is lower due to inclusion of 2004 consumption data and increases at a slightly slower rate than the June 2005 forecast due to an assumed decrease in kWh per unit of production.

Figure 4-14: SDG&E Planning Area Industrial Consumption

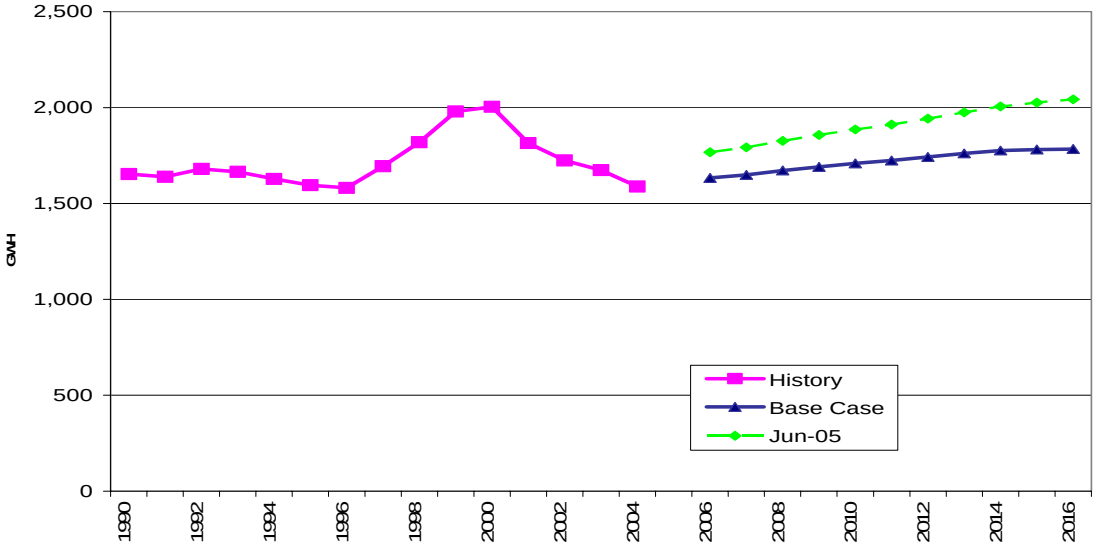
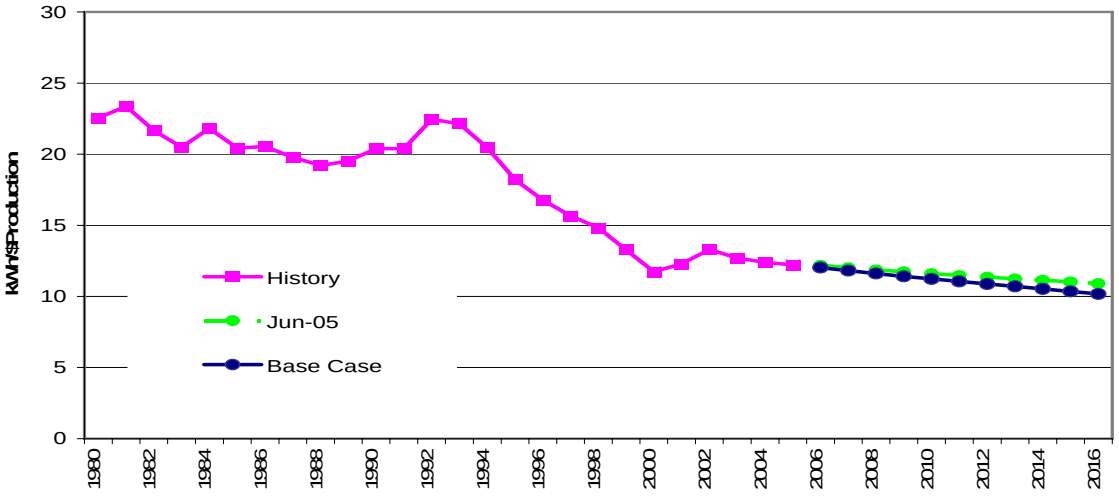


Figure 4-15 provides a comparison of use per dollar value of production between the June 2005 and revised forecasts. For the revised forecast kWh per dollar of industrial value added is projected to decline at a slightly faster rate than was assumed in the June forecast.

Figure 4-15: SDG&E Planning Area Industrial Use per Production Unit



Other Sectors

Figures 4-16 and 4-17 provide comparisons of the remaining sector electricity consumption forecasts. Figure 4-16 provides a comparison of the transportation, communication and utilities (TCU) sector forecasts. The baseline TCU sector forecast is lower than the June 05 forecast due to a lower starting point as indicated by the 2004 consumption level. The baseline growth rate is the same as in the June forecast.

Figure 4-16: SDG&E Planning Area Transportation, Communication & Utilities Sector Electricity Consumption

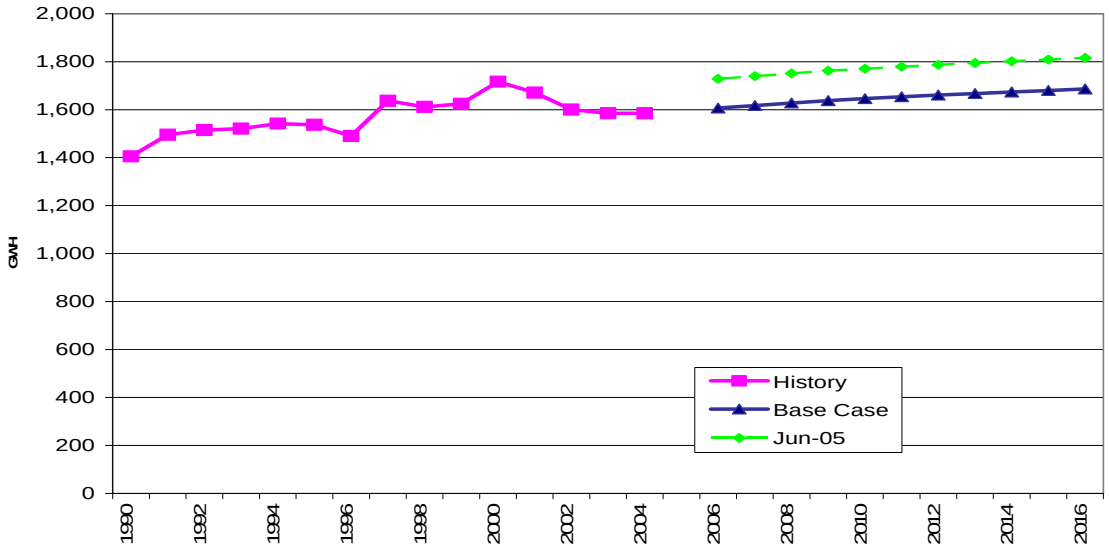


Figure 4-17 provides comparisons of the agriculture and water pumping and mining and oil extraction sector forecasts. Changes in both of these forecasts are due to in inclusion of 2004 consumption data, which changed the starting points for the respective forecasts.

Figure 4-17: SDG&E Planning Area Agriculture & Water Pumping and Mining & Oil Extraction Electricity Consumption Forecasts

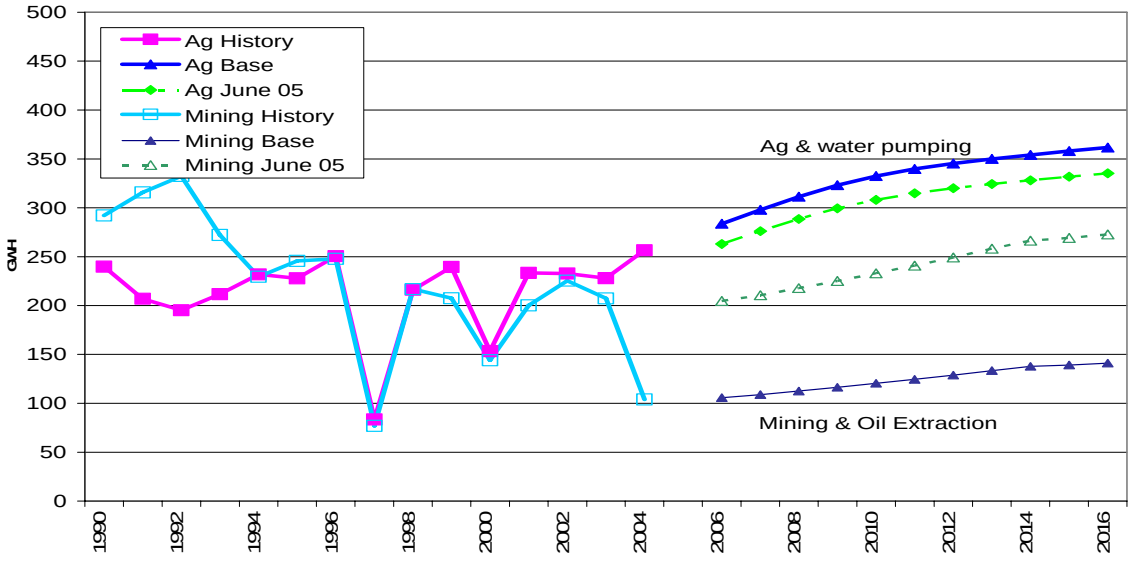
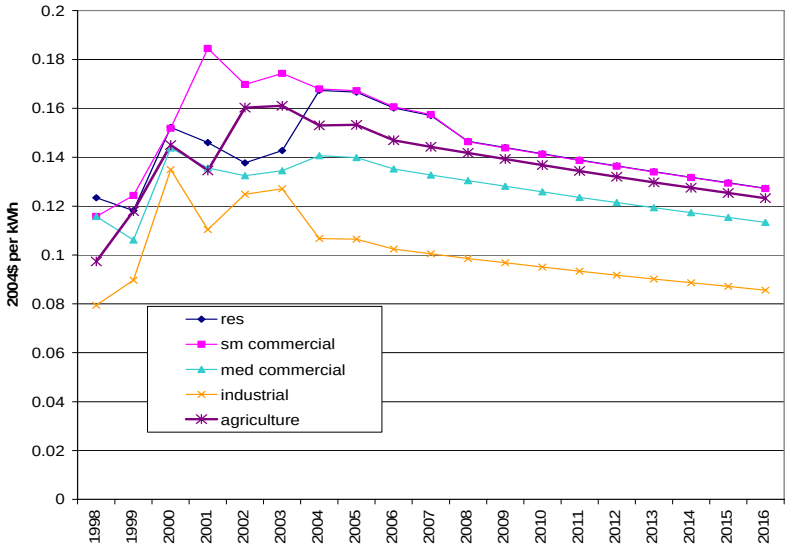


Figure 4-21 shows the sector prices used in the CED 2006 forecast for the SDG&E planning area. These electricity prices are inputs to the forecast and are based on information provided by each of the LSEs in the SDG&E planning area.[1] They represent a weighted average of SDG&E bundled service area and ESP price projections by customer class.

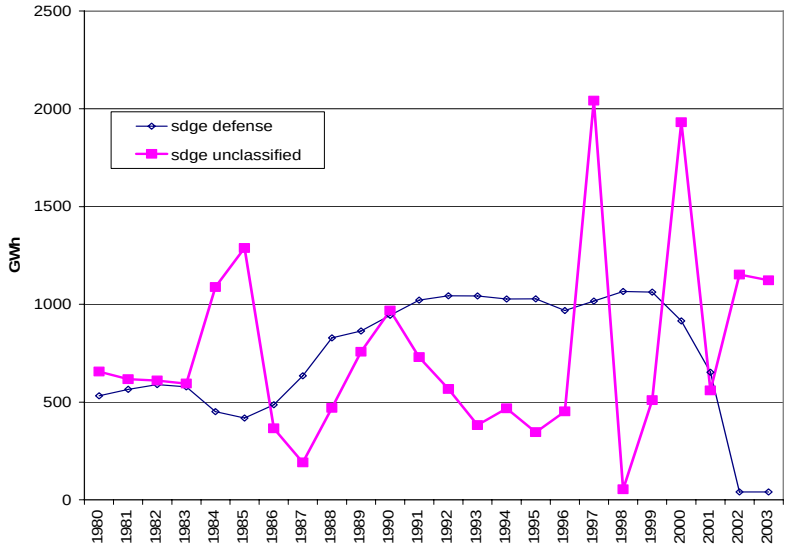
Figure 4-21: SDG&E Planning Area Prices Used in Forecast



Uncertainty Introduced by Historical Data Inaccuracy

Figure 4-22 presents the historic values of unclassified electricity and national defense industry consumption for the SDG&E planning area, as reported to the Energy Commission pursuant to QFER reporting requirements. For the CED 2006 forecast, the staff allocated unclassified sales to national defense consumption so as to match recent historic levels. Staff believes that the drastic decrease in national defense industry consumption indicated by the reported data is not reasonable. Even if national defense consumption were no longer served by SDG&E through bundled service rates, some other LSE should be reporting sales classified as national defense to the Energy Commission. This data classification issue noted to point out the need for more accurate reporting of electricity sales in order to produce more informed forecasts. In the absence of additional information, staff must resort to ad hoc methods of allocating unclassified consumption to individual sectors (for example, pro rata allocations based on classified sales). To the extent these methods do not reflect actual, sector specific consumption, the resulting forecasts will have greater uncertainty. Re-instituting a long-term planning process requires greater attention to fundamental data collection activities that serve as the starting point for forecasting efforts.

Figure 4-22: SDG&E Planning Area Unclassified and Defense Industry Consumption



[1] All LSEs >200MW peak demand were required to provide electricity price projections by customer sector pursuant to GENERAL INSTRUCTIONS: RETAIL ELECTRICITY PRICE FORECAST ELECTRICITY DATA REQUEST 2003-2016 adopted by Commissioner order, November 3, 2004.

Form 1.1 - SDG&E
Electricity Consumption by Sector (GWh)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighti ng	Total Consumption
1980	3,879	3,555	994	61	193	955	92	9,729
1981	3,848	3,577	1,037	58	227	968	89	9,804
1982	3,858	3,701	1,035	57	194	1,024	82	9,950
1983	3,909	3,900	987	85	197	1,038	77	10,192
1984	4,056	4,174	1,195	90	240	1,021	78	10,854
1985	4,249	4,291	1,199	99	214	1,058	77	11,187
1986	4,323	4,728	1,224	163	225	944	76	11,684
1987	4,638	4,917	1,322	190	214	1,019	77	12,377
1988	4,928	5,130	1,440	187	238	1,250	74	13,246
1989	5,144	5,406	1,527	225	253	1,311	73	13,939
1990	5,421	5,841	1,653	292	240	1,405	73	14,926
1991	5,333	5,698	1,640	316	207	1,495	76	14,764
1992	5,609	6,257	1,680	332	195	1,515	76	15,665
1993	5,549	6,253	1,665	272	212	1,521	77	15,549
1994	5,729	6,352	1,628	229	232	1,542	79	15,791
1995	5,734	6,503	1,595	246	228	1,537	81	15,923
1996	5,935	6,850	1,581	248	251	1,491	82	16,437
1997	6,123	7,384	1,694	77	84	1,637	83	17,082
1998	6,319	7,355	1,819	217	216	1,611	93	17,630
1999	6,453	7,716	1,979	207	239	1,624	93	18,312
2000	6,513	8,668	2,004	144	153	1,717	96	19,295
2001	6,116	7,537	1,815	200	233	1,671	98	17,671
2002	6,326	7,755	1,724	225	233	1,600	96	17,959
2003	6,745	8,133	1,673	207	228	1,585	105	18,677
2004	7,074	8,917	1,588	104	257	1,585	102	19,627
2006	7,416	9,201	1,633	106	284	1,607	108	20,354
2007	7,540	9,354	1,649	109	298	1,618	109	20,676
2008	7,673	9,544	1,672	113	311	1,628	110	21,051
2009	7,805	9,692	1,691	116	323	1,638	110	21,376
2010	7,928	9,842	1,709	120	333	1,646	111	21,689
2011	8,055	9,989	1,724	124	340	1,654	112	21,998
2012	8,184	10,135	1,742	129	345	1,661	113	22,308
2013	8,311	10,278	1,761	133	350	1,668	113	22,614
2014	8,441	10,419	1,776	138	354	1,674	114	22,915
2015	8,574	10,557	1,781	139	358	1,680	115	23,205
2016	8,710	10,692	1,784	141	362	1,686	115	23,490
Annual Growth Rates (%)								
1980-1990	3.4	5.1	5.2	16.9	2.2	3.9	-2.2	4.4
1990-2000	1.9	4.0	1.9	-6.8	-4.4	2.0	2.7	2.6
2000-2004	2.1	0.7	-5.6	-7.8	13.7	-2.0	1.5	0.4
2004-2008	2.1	1.7	1.3	2.0	5.0	0.7	1.9	1.8
2008-2016	1.6	1.4	0.8	2.9	1.9	0.4	0.6	1.4
2004-2016	1.7	1.5	1.0	2.6	2.9	0.5	1.0	1.5

Form 1.1a - SDGE
Electricity Sales by Sector (GWh)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighti ng	Total Consumption
1980	3,879	3,555	994	61	193	955	92	9,729
1981	3,848	3,577	1,037	58	227	968	89	9,804
1982	3,858	3,696	1,029	57	194	1,024	82	9,939
1983	3,909	3,871	969	85	194	1,038	77	10,143
1984	4,056	4,121	1,135	90	238	993	78	10,711
1985	4,249	4,197	1,118	99	212	986	77	10,938
1986	4,323	4,610	1,114	163	225	865	76	11,377
1987	4,638	4,756	1,130	190	214	925	77	11,930
1988	4,927	4,937	1,204	187	238	1,154	74	12,722
1989	5,144	5,238	1,298	225	253	1,206	73	13,437
1990	5,421	5,686	1,450	292	239	1,298	73	14,460
1991	5,333	5,552	1,427	316	206	1,384	76	14,294
1992	5,609	6,123	1,471	332	195	1,412	76	15,218
1993	5,549	6,115	1,472	272	211	1,438	77	15,134
1994	5,729	6,208	1,449	229	232	1,455	79	15,381
1995	5,734	6,360	1,420	246	228	1,456	81	15,524
1996	5,935	6,708	1,407	248	251	1,416	82	16,046
1997	6,123	7,242	1,530	77	84	1,560	83	16,698
1998	6,319	7,213	1,659	217	216	1,533	93	17,249
1999	6,453	7,577	1,815	207	239	1,547	93	17,931
2000	6,513	8,531	1,854	144	153	1,637	96	18,928
2001	6,116	7,497	1,701	200	233	1,618	98	17,463
2002	6,326	7,712	1,597	225	233	1,560	96	17,749
2003	6,745	8,006	1,521	207	228	1,572	105	18,385
2004	7,074	8,776	1,418	104	257	1,571	102	19,301
2006	7,416	9,040	1,440	106	284	1,591	108	19,984
2007	7,540	9,183	1,444	109	298	1,601	109	20,283
2008	7,673	9,371	1,464	113	311	1,611	110	20,652
2009	7,805	9,516	1,479	116	323	1,620	110	20,970
2010	7,928	9,663	1,494	120	333	1,628	111	21,277
2011	8,055	9,808	1,506	124	340	1,635	112	21,580
2012	8,184	9,951	1,521	129	345	1,642	113	21,885
2013	8,311	10,092	1,537	133	350	1,649	113	22,185
2014	8,441	10,230	1,549	138	354	1,655	114	22,481
2015	8,574	10,366	1,552	139	358	1,661	115	22,765
2016	8,710	10,498	1,551	141	362	1,667	115	23,045
Annual Growth Rates (%)								
1980-1990	3.4	4.8	3.8	16.9	2.2	3.1	-2.2	4.0
1990-2000	1.9	4.1	2.5	-6.8	-4.4	2.3	2.7	2.7
2000-2004	2.1	0.7	-6.5	-7.8	13.7	-1.0	1.5	0.5
2004-2008	2.1	1.7	0.8	2.0	5.0	0.6	1.9	1.7
2008-2016	1.6	1.4	0.7	2.9	1.9	0.4	0.6	1.4
2004-2016	1.7	1.5	0.8	2.6	2.9	0.5	1.0	1.5

Form 1.1b - SDGE
Electricity Sales by Sector (GWh)
High Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighti ng	Total Consumption
1980	3,879	3,555	994	61	193	955	92	9,729
1981	3,848	3,577	1,037	58	227	968	89	9,804
1982	3,858	3,696	1,029	57	194	1,024	82	9,939
1983	3,909	3,871	969	85	194	1,038	77	10,143
1984	4,056	4,121	1,135	90	238	993	78	10,711
1985	4,249	4,197	1,118	99	212	986	77	10,938
1986	4,323	4,610	1,114	163	225	865	76	11,377
1987	4,638	4,756	1,130	190	214	925	77	11,930
1988	4,927	4,937	1,204	187	238	1,154	74	12,722
1989	5,144	5,238	1,298	225	253	1,206	73	13,437
1990	5,421	5,686	1,450	292	239	1,298	73	14,460
1991	5,333	5,552	1,427	316	206	1,384	76	14,294
1992	5,609	6,123	1,471	332	195	1,412	76	15,218
1993	5,549	6,115	1,472	272	211	1,438	77	15,134
1994	5,729	6,208	1,449	229	232	1,455	79	15,381
1995	5,734	6,360	1,420	246	228	1,456	81	15,524
1996	5,935	6,708	1,407	248	251	1,416	82	16,046
1997	6,123	7,242	1,530	77	84	1,560	83	16,698
1998	6,319	7,213	1,659	217	216	1,533	93	17,249
1999	6,453	7,577	1,815	207	239	1,547	93	17,931
2000	6,513	8,531	1,854	144	153	1,637	96	18,928
2001	6,116	7,497	1,701	200	233	1,618	98	17,463
2002	6,326	7,712	1,597	225	233	1,560	96	17,749
2003	6,745	8,006	1,521	207	228	1,572	105	18,385
2004	7,074	8,776	1,418	104	257	1,571	102	19,301
2006	7,420	9,081	1,455	106	284	1,591	108	20,044
2007	7,547	9,249	1,468	109	298	1,601	109	20,380
2008	7,682	9,465	1,495	113	311	1,611	110	20,787
2009	7,816	9,641	1,520	116	323	1,620	110	21,148
2010	7,941	9,821	1,545	120	333	1,628	111	21,499
2011	8,070	10,000	1,566	124	340	1,635	112	21,848
2012	8,201	10,180	1,592	129	345	1,642	113	22,201
2013	8,330	10,360	1,618	133	350	1,649	113	22,554
2014	8,462	10,538	1,645	138	354	1,655	114	22,906
2015	8,598	10,717	1,661	139	358	1,661	115	23,249
2016	8,736	10,894	1,674	141	362	1,667	115	23,589
Annual Growth Rates (%)								
1980-1990	3.4	4.8	3.8	16.9	2.2	3.1	-2.2	4.0
1990-2000	1.9	4.1	2.5	-6.8	-4.4	2.3	2.7	2.7
2000-2004	2.1	0.7	-6.5	-7.8	13.7	-1.0	1.5	0.5
2004-2008	2.1	1.9	1.3	2.0	5.0	0.6	1.9	1.9
2008-2016	1.6	1.8	1.4	2.9	1.9	0.4	0.6	1.6
2004-2016	1.8	1.8	1.4	2.6	2.9	0.5	1.0	1.7

Form 1.1c - SDGE
Electricity Sales by Sector (GWh)
Low Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighti ng	Total Consumption
1980	3,879	3,555	994	61	193	955	92	9,729
1981	3,848	3,577	1,037	58	227	968	89	9,804
1982	3,858	3,696	1,029	57	194	1,024	82	9,939
1983	3,909	3,871	969	85	194	1,038	77	10,143
1984	4,056	4,121	1,135	90	238	993	78	10,711
1985	4,249	4,197	1,118	99	212	986	77	10,938
1986	4,323	4,610	1,114	163	225	865	76	11,377
1987	4,638	4,756	1,130	190	214	925	77	11,930
1988	4,927	4,937	1,204	187	238	1,154	74	12,722
1989	5,144	5,238	1,298	225	253	1,206	73	13,437
1990	5,421	5,686	1,450	292	239	1,298	73	14,460
1991	5,333	5,552	1,427	316	206	1,384	76	14,294
1992	5,609	6,123	1,471	332	195	1,412	76	15,218
1993	5,549	6,115	1,472	272	211	1,438	77	15,134
1994	5,729	6,208	1,449	229	232	1,455	79	15,381
1995	5,734	6,360	1,420	246	228	1,456	81	15,524
1996	5,935	6,708	1,407	248	251	1,416	82	16,046
1997	6,123	7,242	1,530	77	84	1,560	83	16,698
1998	6,319	7,213	1,659	217	216	1,533	93	17,249
1999	6,453	7,577	1,815	207	239	1,547	93	17,931
2000	6,513	8,531	1,854	144	153	1,637	96	18,928
2001	6,116	7,497	1,701	200	233	1,618	98	17,463
2002	6,326	7,712	1,597	225	233	1,560	96	17,749
2003	6,745	8,006	1,521	207	228	1,572	105	18,385
2004	7,074	8,776	1,418	104	257	1,571	102	19,301
2006	7,316	9,025	1,440	106	284	1,591	108	19,869
2007	7,435	9,163	1,444	109	298	1,601	109	20,158
2008	7,563	9,346	1,464	113	311	1,611	110	20,517
2009	7,688	9,488	1,479	116	323	1,620	110	20,825
2010	7,807	9,631	1,494	120	333	1,628	111	21,124
2011	7,931	9,773	1,506	124	340	1,635	112	21,421
2012	8,056	9,913	1,521	129	345	1,642	113	21,719
2013	8,181	10,052	1,537	133	350	1,649	113	22,015
2014	8,307	10,188	1,549	138	354	1,655	114	22,305
2015	8,449	10,322	1,552	139	358	1,661	115	22,595
2016	8,590	10,452	1,551	141	362	1,667	115	22,878
Annual Growth Rates (%)								
1980-1990	3.4	4.8	3.8	16.9	2.2	3.1	-2.2	4.0
1990-2000	1.9	4.1	2.5	-6.8	-4.4	2.3	2.7	2.7
2000-2004	2.1	0.7	-6.5	-7.8	13.7	-1.0	1.5	0.5
2004-2008	1.7	1.6	0.8	2.0	5.0	0.6	1.9	1.5
2008-2016	1.6	1.4	0.7	2.9	1.9	0.4	0.6	1.4
2004-2016	1.6	1.5	0.8	2.6	2.9	0.5	1.0	1.4

Form 1.2 - SDGE
Net Energy for Load (GWh)
Base Case

Year	Total Consumption	Net Losses	Gross Generation	Private Supply	Net Energy for Load
1980	9,729	690	10,419	0	10,419
1981	9,804	695	10,499	0	10,499
1982	9,950	705	10,655	11	10,644
1983	10,192	719	10,912	50	10,862
1984	10,854	759	11,614	144	11,470
1985	11,187	775	11,963	250	11,713
1986	11,684	807	12,490	307	12,183
1987	12,377	846	13,223	447	12,776
1988	13,246	902	14,148	524	13,624
1989	13,939	953	14,891	502	14,389
1990	14,926	1,025	15,952	466	15,485
1991	14,764	1,013	15,778	470	15,308
1992	15,665	1,079	16,744	446	16,297
1993	15,549	1,073	16,622	415	16,207
1994	15,791	1,091	16,881	410	16,472
1995	15,923	1,101	17,024	400	16,624
1996	16,437	1,138	17,574	391	17,184
1997	17,082	1,184	18,266	384	17,882
1998	17,630	1,223	18,853	381	18,472
1999	18,312	1,271	19,583	381	19,202
2000	19,295	1,342	20,637	367	20,270
2001	17,671	1,238	18,909	208	18,701
2002	17,959	1,258	19,218	210	19,007
2003	18,677	1,304	19,980	292	19,689
2004	19,627	1,368	20,995	326	20,670
2006	20,354	1,417	21,771	370	21,401
2007	20,676	1,438	22,114	392	21,721
2008	21,051	1,464	22,516	400	22,116
2009	21,376	1,487	22,863	406	22,457
2010	21,689	1,509	23,198	412	22,786
2011	21,998	1,530	23,528	418	23,110
2012	22,308	1,552	23,860	423	23,436
2013	22,614	1,573	24,187	429	23,758
2014	22,915	1,594	24,509	435	24,075
2015	23,205	1,614	24,819	440	24,379
2016	23,490	1,634	25,124	445	24,679
Annual Growth Rates (%)					
1980-1990	4.4	4.0	4.4		4.0
1990-2000	2.6	2.7	2.6	-2.4	2.7
2000-2004	0.4	0.5	0.4	-2.9	0.5
2004-2008	1.8	1.7	1.8	5.2	1.7
2008-2016	1.4	1.4	1.4	1.3	1.4
2004-2016	1.5	1.5	1.5	2.6	1.5

Form 1.3 -SDG&E
Peak Demand by Sector (MW)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	Other	Total Consumption
1980	653	874	150	8	30	155	1,870
1981	642	937	155	7	34	153	1,928
1982	642	891	148	7	28	154	1,871
1983	629	944	136	10	28	150	1,896
1984	732	1,068	174	11	32	149	2,166
1985	751	1,018	193	13	29	167	2,172
1986	795	1,016	202	23	32	155	2,222
1987	844	985	189	21	27	143	2,209
1988	869	1,231	231	25	33	199	2,587
1989	802	1,202	218	27	31	190	2,470
1990	860	1,402	241	37	29	211	2,780
1991	971	1,329	241	38	26	223	2,828
1992	952	1,565	259	43	26	231	3,076
1993	933	1,263	237	30	23	211	2,697
1994	975	1,557	268	31	28	248	3,107
1995	1,036	1,469	255	30	28	237	3,055
1996	1,094	1,486	243	29	28	223	3,105
1997	1,280	1,599	274	9	28	248	3,438
1998	1,351	1,663	338	30	34	280	3,695
1999	1,191	1,495	329	28	30	264	3,335
2000	1,078	1,500	343	20	29	259	3,230
2001	1,075	1,288	263	22	24	216	2,890
2002	1,248	1,467	287	29	30	258	3,318
2003	1,250	1,721	304	31	31	289	3,627
2004	1,374	1,818	269	27	28	253	3,769
2005	1,432	1,870	289	28	32	268	3,919
2006	1,463	1,905	292	29	33	270	3,992
2007	1,491	1,933	295	29	35	271	4,054
2008	1,520	1,969	299	30	36	273	4,128
2009	1,549	1,996	302	31	38	275	4,192
2010	1,576	2,024	306	33	39	276	4,254
2011	1,604	2,051	308	34	40	278	4,314
2012	1,632	2,078	312	35	40	279	4,376
2013	1,660	2,104	315	36	41	280	4,437
2014	1,688	2,130	318	37	42	281	4,496
2015	1,717	2,156	319	38	42	282	4,553
2016	1,746	2,181	320	38	42	283	4,609
Annual Growth Rates (%)							
1980-1990	2.8	4.8	4.8	16.9	-0.3	3.1	4.0
1990-2000	2.3	0.7	3.6	-6.2	-0.1	2.1	1.5
2000-2004	6.2	4.9	-5.9	7.9	-0.8	-0.6	3.9
2004-2008	2.6	2.0	2.7	3.5	6.7	1.9	2.3
2008-2016	1.7	1.3	0.8	2.9	1.9	0.4	1.4
2004-2016	2.0	1.5	1.5	3.1	3.5	0.9	1.7

Form 1.4a - SDG&E Planning Area
Peak Demand (MW)
Base Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	1,870	180	2,050	0	2,050	58.0
1981	1,928	185	2,113	0	2,113	56.7
1982	1,871	179	2,050	2	2,049	59.3
1983	1,896	181	2,077	8	2,069	59.9
1984	2,166	206	2,372	24	2,348	55.8
1985	2,172	204	2,376	42	2,335	57.3
1986	2,222	208	2,430	52	2,379	58.5
1987	2,209	205	2,414	75	2,339	62.4
1988	2,587	240	2,827	88	2,739	56.8
1989	2,470	229	2,699	84	2,615	62.8
1990	2,780	259	3,039	78	2,961	59.7
1991	2,828	264	3,092	79	3,013	58.0
1992	3,076	288	3,364	75	3,289	56.6
1993	2,697	252	2,949	70	2,880	64.2
1994	3,107	292	3,399	69	3,330	56.5
1995	3,055	287	3,342	67	3,275	58.0
1996	3,105	292	3,397	66	3,331	58.9
1997	3,438	324	3,762	64	3,697	55.2
1998	3,695	349	4,044	64	3,980	53.0
1999	3,335	314	3,649	64	3,585	61.1
2000	3,230	304	3,534	62	3,472	66.6
2001	2,890	274	3,164	35	3,129	67.8
2002	3,318	315	3,633	35	3,598	60.4
2003	3,627	343	3,970	49	3,921	57.4
2004	3,769	357	4,126	55	4,071	57.6
2006	3,992	377	4,369	62	4,307	56.4
2007	4,054	383	4,437	66	4,371	56.4
2008	4,128	390	4,518	67	4,451	56.4
2009	4,192	396	4,588	68	4,520	56.4
2010	4,254	402	4,656	69	4,586	56.4
2011	4,314	407	4,722	70	4,652	56.4
2012	4,376	413	4,789	71	4,718	56.4
2013	4,437	419	4,856	72	4,784	56.4
2014	4,496	425	4,921	73	4,848	56.4
2015	4,553	430	4,983	74	4,909	56.4
2016	4,609	435	5,045	75	4,970	56.4
Annual Growth Rates (%)						
1990-2000	1.5	1.6	1.5	-2.4	1.6	1.1
2000-2001	-10.5	-9.9	-10.5	-43.3	-9.9	1.8
2000-2004	3.9	4.1	3.9	-2.9	4.1	-3.6
2004-2008	2.3	2.3	2.3	5.2	2.3	-0.5
2008-2016	1.4	1.4	1.4	1.3	1.4	0.0
2004-2016	1.7	1.7	1.7	2.6	1.7	-0.2

Form 1.4b - SDG&E Planning Area
Peak Demand (MW)
High Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	1,774	170	1,944	0	1,944	61.2
1981	1,913	184	2,097	0	2,097	57.2
1982	1,847	177	2,025	2	2,023	60.1
1983	1,819	174	1,993	8	1,985	62.5
1984	2,095	199	2,294	24	2,270	57.7
1985	2,052	193	2,245	42	2,203	60.7
1986	2,116	198	2,314	52	2,262	61.5
1987	2,251	209	2,460	75	2,385	61.2
1988	2,534	235	2,768	88	2,680	58.0
1989	2,411	223	2,634	84	2,550	64.4
1990	2,666	248	2,915	78	2,837	62.3
1991	2,894	270	3,164	79	3,085	56.6
1992	3,106	291	3,397	75	3,322	56.0
1993	2,790	261	3,051	70	2,981	62.1
1994	3,123	293	3,416	69	3,348	56.2
1995	3,112	292	3,404	67	3,337	56.9
1996	3,156	297	3,453	66	3,388	57.9
1997	3,544	334	3,878	64	3,814	53.5
1998	3,672	346	4,019	64	3,955	53.3
1999	3,341	315	3,655	64	3,591	61.0
2000	3,167	298	3,465	62	3,404	68.0
2001	2,976	282	3,258	35	3,223	66.2
2002	3,424	325	3,750	35	3,714	58.4
2003	3,621	343	3,964	49	3,915	57.4
2004	3,815	361	4,176	55	4,121	57.3
2006	4,004	378	4,382	62	4,320	56.7
2007	4,074	385	4,458	66	4,393	56.7
2008	4,155	392	4,548	67	4,481	56.7
2009	4,227	399	4,627	68	4,558	56.7
2010	4,298	406	4,704	69	4,635	56.7
2011	4,368	413	4,780	70	4,710	56.7
2012	4,439	419	4,858	71	4,787	56.7
2013	4,510	426	4,936	72	4,864	56.7
2014	4,581	433	5,013	73	4,940	56.7
2015	4,649	439	5,089	74	5,015	56.7
2016	4,717	446	5,163	75	5,088	56.7

Annual Growth Rates (%)

1990-2000	1.7	1.8	1.7	-2.4	1.8	0.9
2000-2001	-6.0	-5.3	-6.0	-43.3	-5.3	-2.6
2000-2004	4.8	4.9	4.8	-2.9	4.9	-4.2
2004-2008	2.2	2.1	2.2	5.2	2.1	-0.2
2008-2016	1.6	1.6	1.6	1.3	1.6	0.0
2004-2016	1.8	1.8	1.8	2.6	1.8	-0.1

Form 1.4c - SDG&E Planning Area
Peak Demand (MW)
Low Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	1,774	170	1,944	0	1,944	61.2
1981	1,913	184	2,097	0	2,097	57.2
1982	1,847	177	2,025	2	2,023	60.1
1983	1,819	174	1,993	8	1,985	62.5
1984	2,095	199	2,294	24	2,270	57.7
1985	2,052	193	2,245	42	2,203	60.7
1986	2,116	198	2,314	52	2,262	61.5
1987	2,251	209	2,460	75	2,385	61.2
1988	2,534	235	2,768	88	2,680	58.0
1989	2,411	223	2,634	84	2,550	64.4
1990	2,666	248	2,915	78	2,837	62.3
1991	2,894	270	3,164	79	3,085	56.6
1992	3,106	291	3,397	75	3,322	56.0
1993	2,790	261	3,051	70	2,981	62.1
1994	3,123	293	3,416	69	3,348	56.2
1995	3,112	292	3,404	67	3,337	56.9
1996	3,156	297	3,453	66	3,388	57.9
1997	3,544	334	3,878	64	3,814	53.5
1998	3,672	346	4,019	64	3,955	53.3
1999	3,341	315	3,655	64	3,591	61.0
2000	3,167	298	3,465	62	3,404	68.0
2001	2,976	282	3,258	35	3,223	66.2
2002	3,424	325	3,750	35	3,714	58.4
2003	3,621	343	3,964	49	3,915	57.4
2004	3,815	361	4,176	55	4,121	57.3
2006	3,969	375	4,344	62	4,282	56.7
2007	4,029	381	4,410	66	4,344	56.7
2008	4,102	387	4,489	67	4,422	56.7
2009	4,163	393	4,556	68	4,488	56.7
2010	4,223	399	4,622	69	4,553	56.7
2011	4,282	404	4,687	70	4,617	56.7
2012	4,343	410	4,753	71	4,682	56.7
2013	4,403	416	4,818	72	4,746	56.7
2014	4,461	421	4,882	73	4,809	56.7
2015	4,519	427	4,946	74	4,872	56.7
2016	4,576	432	5,008	75	4,933	56.7
Annual Growth Rates (%)						
1990-2000	1.7	1.8	1.7	-2.4	1.8	0.9
2000-2001	-6.0	-5.3	-6.0	-43.3	-5.3	-2.6
2000-2004	4.8	4.9	4.8	-2.9	4.9	-4.2
2004-2008	1.8	1.8	1.8	5.2	1.8	-0.2
2008-2016	1.4	1.4	1.4	1.3	1.4	0.0
2004-2016	1.5	1.5	1.5	2.6	1.5	-0.1

Form 1.5 - SDG&E
Noncoincident Peak Demand Temperature Scenarios
Base Case

Year	1-in-2 Temperatures	1-in-5 Temperatures	1-in-10 Temperatures	1-in-20 Temperatures	1-in-5 Multiplier	1-in-10 Multiplier	1-in-20 Multiplier
2006	4,307	4,709	4,864	4,921	1.093	1.129	1.143
2007	4,371	4,779	4,937	4,995	1.093	1.129	1.143
2008	4,451	4,866	5,027	5,086	1.093	1.129	1.143
2009	4,520	4,941	5,104	5,164	1.093	1.129	1.143
2010	4,586	5,014	5,179	5,240	1.093	1.129	1.143
2011	4,652	5,085	5,253	5,315	1.093	1.129	1.143
2012	4,718	5,158	5,328	5,391	1.093	1.129	1.143
2013	4,784	5,230	5,402	5,466	1.093	1.129	1.143
2014	4,848	5,300	5,475	5,539	1.093	1.129	1.143
2015	4,909	5,367	5,544	5,609	1.093	1.129	1.143
2016	4,970	5,433	5,613	5,679	1.093	1.129	1.143

Form 1.7a - SDGE
Private Supply by Sector (GWh)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighti ng	Total Consumption
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	5	6	0	0	0	0	11
1983	0	29	18	0	3	0	0	50
1984	0	53	60	0	3	28	0	144
1985	0	94	81	0	2	72	0	250
1986	0	118	110	0	0	79	0	307
1987	0	161	192	0	0	93	0	447
1988	0	193	235	0	0	95	0	524
1989	0	167	229	0	0	105	0	502
1990	0	155	203	0	1	107	0	466
1991	0	146	213	0	1	111	0	470
1992	0	134	209	0	1	103	0	446
1993	0	139	193	0	0	83	0	415
1994	0	144	178	0	0	87	0	410
1995	0	143	175	0	0	81	0	400
1996	0	142	174	0	0	75	0	391
1997	0	142	165	0	0	77	0	384
1998	0	142	161	0	0	78	0	381
1999	0	139	165	0	0	78	0	381
2000	0	137	150	0	0	79	0	367
2001	0	41	114	0	0	53	0	208
2002	0	42	128	0	0	40	0	210
2003	0	127	152	0	0	13	0	292
2004	0	142	170	0	0	14	0	326
2005	0	151	182	0	0	15	0	348
2006	0	161	193	0	0	16	0	370
2007	0	170	205	0	0	17	0	392
2008	0	174	209	0	0	17	0	400
2009	0	176	212	0	0	18	0	406
2010	0	179	215	0	0	18	0	412
2011	0	181	218	0	0		0	399
2012	0	184	221	0	0		0	405
2013	0	186	224	0	0		0	410
2014	0	189	227	0	0		0	416
2015	0	191	230	0	0		0	421
2016	0	193	232	0	0		0	425

Annual Growth Rates (%)

1980-1990				
1990-2000	-1.2	-3.0	-3.0	-2.4
2000-2003	-2.6	0.5	-45.7	-7.3
2003-2008	6.5	6.5	6.5	6.5
2008-2016	1.3	1.3	-100.0	0.8
2003-2016	3.3	3.3	-100.0	2.9

Form 1.8
SDG&E Service Area and Bundled Customer Forecasts

Forecasts for SDG&E Bundled Customers

	Peak Demand (MW)			Net Energy for Load (GWh)		
	Low	Base	High	Low	Base	High
1999	3,361	3,361	3,361	13,621	13,621	13,621
2000	3,177	3,177	3,177	14,382	14,382	14,382
2001	2,875	2,875	2,875	16,063	16,063	16,063
2002	3,168	3,168	3,168	15,315	15,315	15,315
2003	3,351	3,351	3,351	16,112	16,112	16,112
2004	3,543	3,543	3,543	16,985	16,985	16,985
2005	3,634	3,649	3,655	17,251	17,325	17,351
2006	3,696	3,720	3,732	17,541	17,661	17,717
2007	3,754	3,781	3,800	17,823	17,954	18,043
2008	3,827	3,856	3,882	18,173	18,314	18,438
2009	3,890	3,921	3,956	18,477	18,627	18,792
2010	3,951	3,984	4,027	18,771	18,930	19,135
2011	4,011	4,046	4,098	19,063	19,228	19,476
2012	4,073	4,109	4,171	19,357	19,529	19,822
2013	4,134	4,171	4,243	19,649	19,825	20,167
2014	4,194	4,232	4,315	19,936	20,117	20,513
2015	4,254	4,290	4,385	20,225	20,400	20,849
2016	4,312	4,348	4,454	20,507	20,679	21,185
Annual Growth Rate (%)						
2006-2016	1.6%	1.6%	1.8%	1.6%	1.6%	1.8%

Forecasts for SDG&E Service Area (Including Direct Access)

	Peak Demand (MW)			Net Energy for Load (GWh)		
	Low	Base	High	Low	Base	High
1999	3,591	3,591	3,591	19,202	19,202	19,202
2000	3,404	3,404	3,404	20,270	20,270	20,270
2001	3,223	3,223	3,223	18,701	18,701	18,701
2002	3,714	3,714	3,714	19,007	19,007	19,007
2003	3,915	3,915	3,915	19,689	19,689	19,689
2004	4,121	4,121	4,121	20,670	20,670	20,670
2005	4,216	4,231	4,237	20,956	21,032	21,063
2006	4,282	4,307	4,320	21,278	21,401	21,466
2007	4,344	4,371	4,393	21,587	21,721	21,825
2008	4,422	4,451	4,481	21,972	22,116	22,260
2009	4,488	4,520	4,558	22,301	22,457	22,647
2010	4,553	4,586	4,635	22,622	22,786	23,023
2011	4,617	4,652	4,710	22,940	23,110	23,397
2012	4,682	4,718	4,787	23,259	23,436	23,775
2013	4,746	4,784	4,864	23,576	23,758	24,153
2014	4,809	4,848	4,940	23,886	24,075	24,530
2015	4,872	4,909	5,015	24,197	24,379	24,897
2016	4,933	4,970	5,088	24,501	24,679	25,261
Annual Growth Rate (%)						
2006-2016	1.4%	1.4%	1.6%	1.4%	1.4%	1.6%

Form 2.2 - SDG&E Planning Area
Planning Area Economic and Demographic Assumptions
Base Case

Year	Population	Households - Base & Low	Households - High	Per Capita Income - Low (2003$)	Per Capita Income - Base (2003$)	Per Capita Income - HIgh (2003$)	Industrial Value Added (Millions 2003$)	Commercial Floorspace (MM Sqft.)
1980	1,890,510	718,312	718,312	23,682	23,682	23,682	4,409	227
1981	1,913,432	725,903	725,903	24,316	24,316	24,316	4,434	239
1982	1,948,429	732,411	732,411	24,578	24,578	24,578	4,777	252
1983	2,033,615	752,124	752,124	25,438	25,438	25,438	4,818	263
1984	2,136,850	783,080	783,080	27,539	27,539	27,539	5,480	275
1985	2,235,850	819,194	819,194	28,631	28,631	28,631	5,867	288
1986	2,323,871	860,569	860,569	28,994	28,994	28,994	5,961	308
1987	2,388,259	890,272	890,272	29,122	29,122	29,122	6,685	326
1988	2,442,254	916,425	916,425	29,464	29,464	29,464	7,494	344
1989	2,495,065	933,395	933,395	29,778	29,778	29,778	7,826	363
1990	2,549,875	946,084	946,084	29,588	29,588	29,588	8,108	381
1991	2,604,754	964,042	964,042	28,937	28,937	28,937	8,041	401
1992	2,653,615	977,591	977,591	29,191	29,191	29,191	7,482	412
1993	2,670,770	988,476	988,476	28,789	28,789	28,789	7,519	419
1994	2,688,860	998,758	998,758	28,796	28,796	28,796	7,952	424
1995	2,699,012	1,008,967	1,008,967	29,112	29,112	29,112	8,757	429
1996	2,714,332	1,019,262	1,019,262	30,122	30,122	30,122	9,430	435
1997	2,780,839	1,032,431	1,032,431	31,481	31,481	31,481	10,813	441
1998	2,842,512	1,047,694	1,047,694	34,115	34,115	34,115	12,270	447
1999	2,908,551	1,064,929	1,064,929	35,839	35,839	35,839	14,900	458
2000	2,982,338	1,078,349	1,078,349	38,058	38,309	38,309	17,082	473
2001	3,058,574	1,095,096	1,095,096	38,572	39,024	39,024	14,646	488
2002	3,120,111	1,112,172	1,112,172	38,938	39,580	39,580	12,981	502
2003	3,175,986	1,128,451	1,128,451	39,178	39,984	39,984	13,201	513
2004	3,222,142	1,144,397	1,144,397	40,232	41,838	41,838	13,665	523
2005	3,268,421	1,159,483	1,160,778	40,612	43,300	43,252	14,130	533
2006	3,314,828	1,174,583	1,177,215	40,826	44,132	44,036	14,486	543
2007	3,361,362	1,189,684	1,193,691	41,304	44,681	44,534	14,886	553
2008	3,408,025	1,204,786	1,210,207	41,862	45,306	45,105	15,362	563
2009	3,454,812	1,219,889	1,226,764	42,350	45,883	45,629	15,804	573
2010	3,498,228	1,233,870	1,242,225	42,810	46,399	46,092	16,232	583
2011	3,540,489	1,247,365	1,257,226	43,350	46,979	46,613	16,639	593
2012	3,582,784	1,260,839	1,272,238	43,874	47,541	47,121	17,086	603
2013	3,625,109	1,274,291	1,287,259	44,353	48,042	47,566	17,544	613
2014	3,667,467	1,287,719	1,302,291	44,825	48,552	48,017	17,988	622
2015	3,709,858	1,301,125	1,317,333	45,483	49,075	48,482	18,362	632
2016	3,752,280	1,314,511	1,332,386	46,105	49,613	48,961	18,706	642
Annual Growth Rates (%)								
1990-2000	1.6	1.3	1.3	2.5	2.6	2.6	7.7	2.2
2000-2001	2.6	1.6	1.6	1.3	1.9	1.9	-14.3	3.3
2000-2004	2.0	1.5	1.5	1.4	2.2	2.2	-5.4	2.6
2004-2008	1.4	1.3	1.4	1.0	2.0	1.9	3.0	1.9
2008-2016	1.2	1.1	1.2	1.2	1.1	1.0	2.5	1.6
2004-2016	1.3	1.2	1.3	1.1	1.4	1.3	2.7	1.7

SDGE

Form 2.3a - SDG&E Planning Area
Electricity Rate Forecast (2003 cents/kwh)
Base Case

Year	GDP Implicit Price Deflator	Residential	Small Commercial	Medium Commercial	Industrial	Agriculture
1990	75.49	13.83	11.58	11.58	9.24	9.91
1991	78.13	13.46	11.43	11.43	9.08	9.75
1992	79.92	13.41	11.24	11.24	8.91	9.85
1993	81.77	13.56	11.64	11.64	8.82	10.46
1994	83.51	12.80	11.30	11.30	8.47	10.56
1995	85.22	12.48	11.10	11.10	8.25	10.15
1996	86.83	13.96	11.07	11.07	8.20	10.06
1997	88.28	13.73	11.71	11.71	8.07	9.89
1998	89.26	12.35	11.58	11.57	7.94	9.73
1999	90.54	11.82	12.44	10.61	8.97	11.80
2000	92.52	15.22	15.19	14.38	13.49	14.50
2001	94.74	14.60	18.45	13.56	11.04	13.46
2002	96.31	13.77	16.98	13.24	12.49	16.03
2003	98.07	14.28	17.43	13.45	12.71	16.10
2004	100.00	16.74	16.79	14.07	10.67	15.31
2005	101.51	16.67	16.72	13.98	10.65	15.33
2006	103.64	16.02	16.06	13.52	10.24	14.70
2007	105.58	15.71	15.75	13.27	10.05	14.43
2008	107.36	14.65	14.63	13.05	9.86	14.18
2009	109.26	14.40	14.38	12.82	9.68	13.93
2010	111.24	14.14	14.12	12.59	9.51	13.68
2011	113.25	13.89	13.87	12.36	9.34	13.43
2012	115.23	13.65	13.63	12.15	9.18	13.20
2013	117.23	13.41	13.39	11.94	9.02	12.98
2014	119.25	13.18	13.17	11.73	8.86	12.75
2015	121.31	12.96	12.94	11.53	8.71	12.54
2016	123.42	12.74	12.72	11.33	8.56	12.32

Annual Growth Rates (%)

1990-2000						
2000-2001	2.4	-4.1	21.5	-5.7	-18.2	-7.2
2000-2003	2.0	-2.1	4.7	-2.2	-2.0	3.5
2003-2008	1.8	0.5	-3.4	-0.6	-5.0	-2.5
2008-2016	1.8	-1.7	-1.7	-1.7	-1.7	-1.7
2003-2016	1.8	-0.9	-2.4	-1.3	-3.0	-2.0

CHAPTER 5

SMUD PLANNING AREA

The Sacramento Municipal Utility District (SMUD) planning area includes SMUD retail customers. For the CED 2006 forecast, the SMUD planning area is confined to Sacramento County and does not take into account proposed expansions of the SMUD service territory into Yolo County.

The SMUD planning area forecast also does not include the new members of the SMUD control area, Roseville, Redding, and the Western Area Power Administration (WAPA). To support electricity system analysis, staff derives forecasts by control area and CAISO congestion zone from the planning area forecasts. Using historic consumption data and regional population projections, the estimated share of the PG&E forecast for WAPA, Roseville, and Redding forecasts are subtracted from the PG&E planning area and added to the SMUD control area. Those results are presented in Chapter 1, Tables 1-3 and 1-4. The results in this chapter are for the SMUD planning area only.

This chapter is organized in a fashion similar to those for the other planning areas. First, the revised forecast ranges of consumption are discussed and compared to the June 2005 forecast. The forecasted load factor, jointly determined by the consumption and peak load estimates, is presented. Second, the ranges of sector consumption forecasts are presented. Third, the sector electricity prices used as inputs to the CED forecast are presented.

Forecast Results

Table 5-1 presents a comparison of the electricity consumption and peak demand scenarios to the June 2005 forecast for selected years. The new baseline forecast is slightly higher than the June 2005 forecast due to revisions in economic and demographic inputs.

Table 5-1
SMUD Planning Area Forecast Comparison

Consumption (GWH)						
	Jun-05	Low	Base	High	Percent Difference Base/Jun-05	Percent Difference High/Low
1990	8,358	8,358	8,358	8,358	0.00%	0.00%
2000	9,491	9,491	9,491	9,491	0.00%	0.00%
2004	10,156	10,150	10,150	10,150	-0.06%	0.00%
2008	11,035	10,983	11,178	11,192	1.29%	1.91%
2016	13,275	12,892	13,435	13,604	1.20%	5.53%
Annual Average Growth Rates						
1990-2000	1.28%	1.28%	1.28%	1.28%		
2000-2004	1.71%	1.69%	1.69%	1.69%		
2004-2008	2.10%	1.99%	2.44%	2.47%		
2004-2016	2.26%	2.01%	2.36%	2.47%		
Peak (MW)						
	Jun-05	Low	Base	High	Percent Difference Base/Draft	Percent Difference High/Low
1990	2,198	2,198	2,198	2,198	0.00%	0.00%
2000	2,693	2,693	2,693	2,693	0.00%	0.00%
2004	2,777	2,764	2,764	2,764	-0.45%	0.00%
2008	3,097	3,082	3,136	3,140	1.25%	1.87%
2016	3,791	3,695	3,844	3,883	1.39%	5.09%
Annual Average Growth Rates						
1990-2000	2.05%	2.05%	2.05%	2.05%		
2000-2004	0.77%	0.66%	0.66%	0.66%		
2004-2008	2.77%	2.76%	3.21%	3.24%		
2004-2016	2.63%	2.45%	2.79%	2.87%		
Historic values are shaded						

Figures 5-1 and 5-2 present graphical representations of the revised forecast ranges compared to the June 2005 baseline forecast. Both the revised electricity consumption and peak forecasts are slightly higher than the June 2005 forecasts due to revisions to the baseline economic and demographic projections.

Figure 5-1: SMUD Planning Area Electricity Forecast

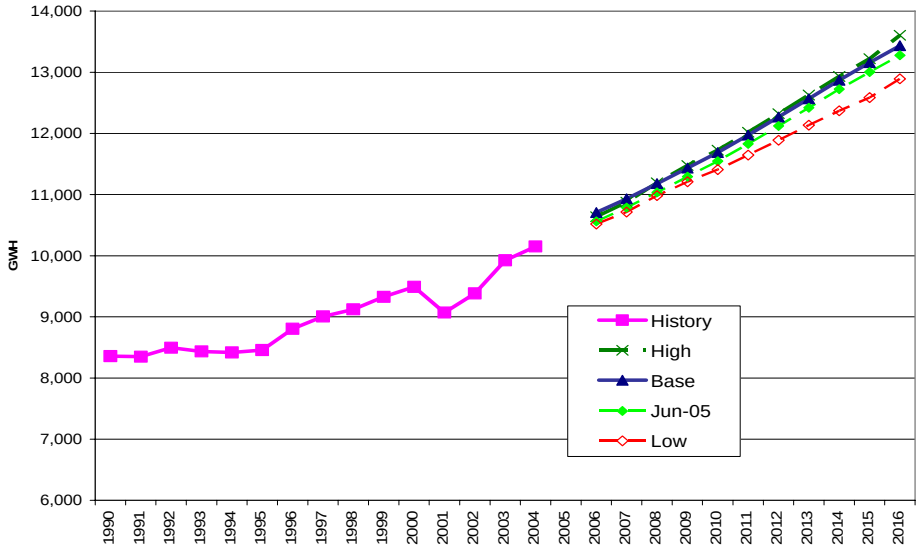


Figure 5-2: SMUD Planning Area Peak

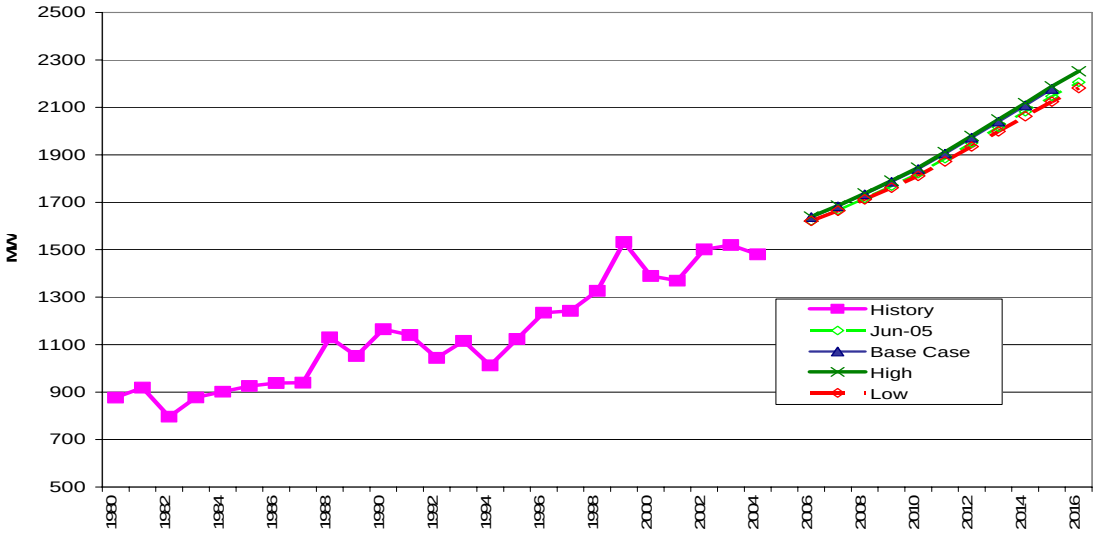


Figure 5-3 provides a comparison of per capita electricity consumption for the revised forecast scenarios and the June 2005 forecast. Projected per capita electricity consumption is relatively constant in all cases except the low scenario.

Figure 5-3: SMUD Planning Area per Capita Electricity Consumption

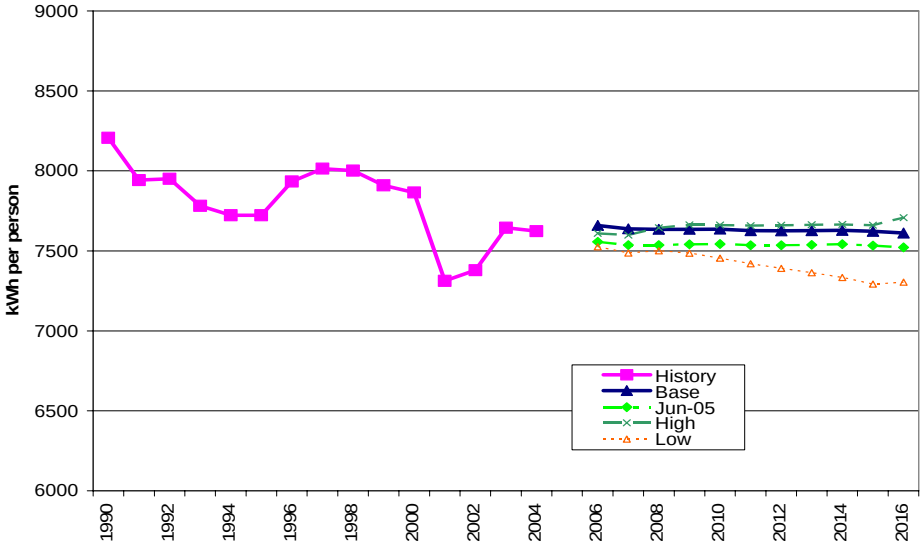


Figure 5-4 provides a comparison of per capita peak demand for the revised forecast scenarios. The new base line per capita peak forecast increases slightly over the forecast period due to a projected increase in residential consumption and a slight upward calibration adjustment due to the inclusion of 2004 data.

Figure 5-4: SMUD Planning Area per Capita Peak Demand

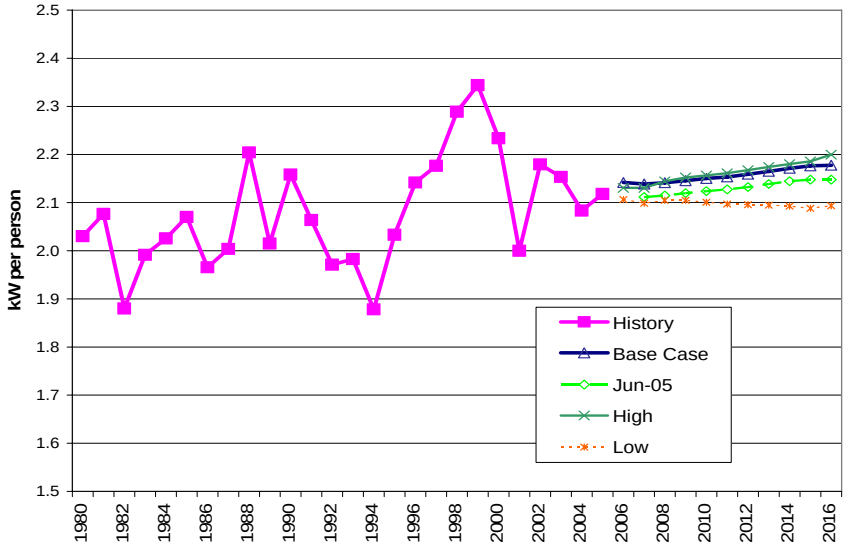
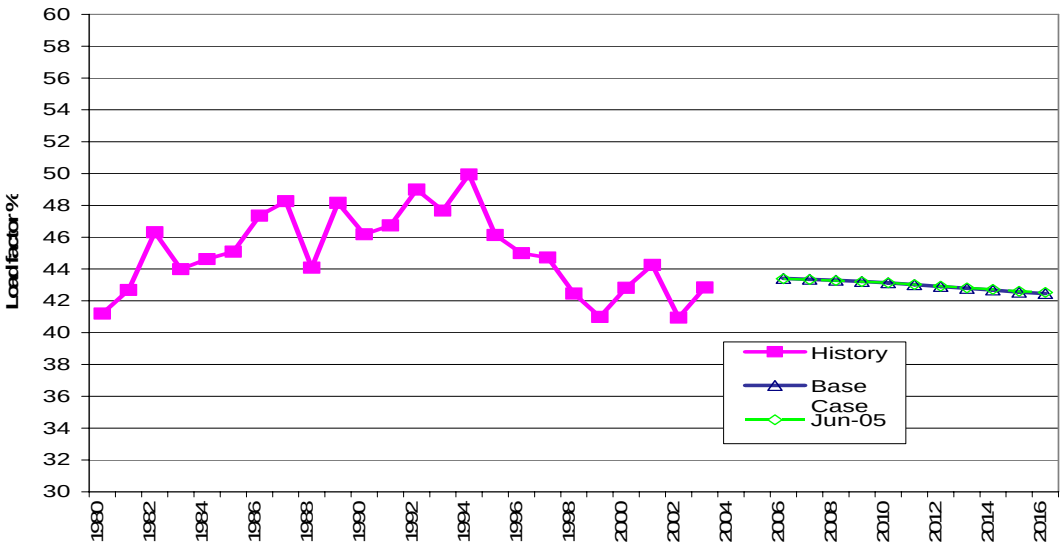


Figure 5-5 provides a comparison of the respective forecast load factors. The load factor is a measure of the relative increase in peak demand with respect to annual electricity consumption. Lower load factors indicate more of a needle peak and higher load factors indicate a more stable load. Variation in historic load factors is caused in part by annual weather patterns. The SMUD load factor has been declining since the mid 1990s, as the residential sector grew faster than other sectors. Because of the projection of strong population growth with only small increases in baseload industrial activity, the forecasted load factor continues this decline, although at a slower rate. This reflects faster growth of weather sensitive load than base load.

Figure 5-5: SMUD Planning Area Load Factor



Sector Level Results and Input Assumptions

Residential

Figure 5-6 provides a comparison between the revised forecast ranges and the June SMUD planning area residential forecasts. As in the previous planning area forecasts, the revised forecast ranges were produced by changing assumptions regarding household income and persons per household projections.

Figure 5-6: SMUD Planning Area Residential Consumption

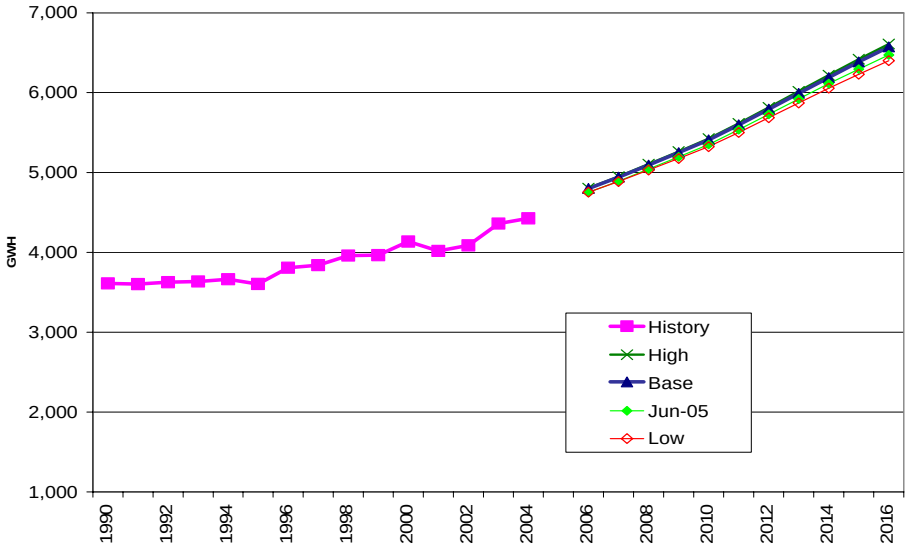
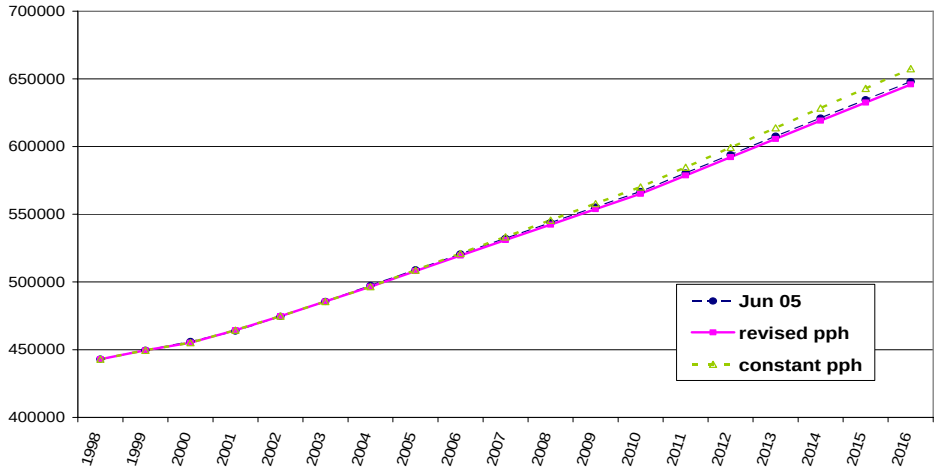


Figure 5-7 provides a comparison of household projections for the scenarios and the June 2005 forecast. The revised household projection is based on recent revisions to historic persons per household estimates. The constant household projection is based on holding persons per household constant at the 2004 level for the entire forecast period.

Figure 5-7: SMUD Planning Area Household Projections



Figures 5-8 and 5-9 provide comparisons of persons per household and household income fore the cases used to develop the range of forecasts. For the revised baseline forecast, the growth in persons per household is slightly higher due to inclusion of the recent DOF county level population and household revisions.

Figure 5-9 provides a comparison of household income between the two forecasts. Household income is derived as the product of per capita income and persons per household. The CED 2006 projection is higher in the short to mid-term projection period because of the use of regional economic forecast data. These data show that, unlike the PG&E planning area, there was virtually no downturn in household income in the SMUD planning area during the recent recession. This higher household income serves to increase the residential forecast over the entire forecast period.

Figure 5-8: SMUD Planning Area
Persons per Household Projections

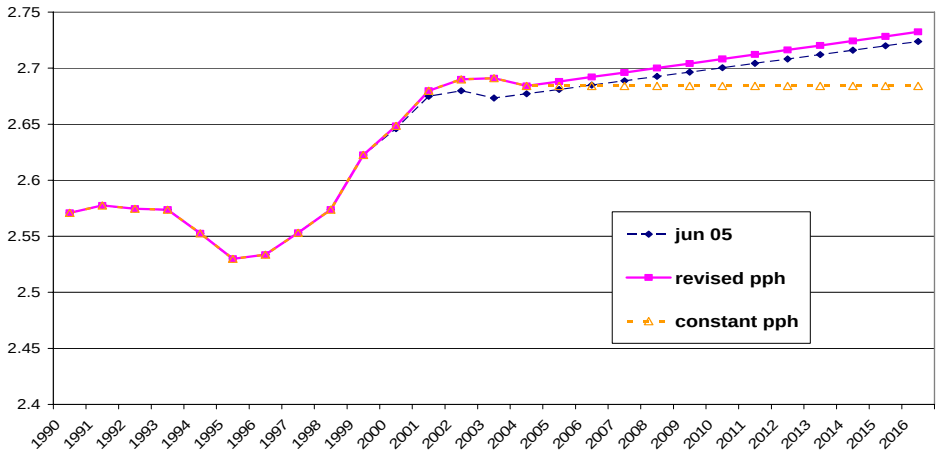


Figure 5-9 provides a comparison of household income used in the forecast scenarios. Household income is derived as the product of per capita income and persons per household. The revised baseline forecast is higher than the June 2005 forecast due to both revisions in persons per household and per capita income projections

Figure 5-9: SMUD Planning Area Household Income Projections

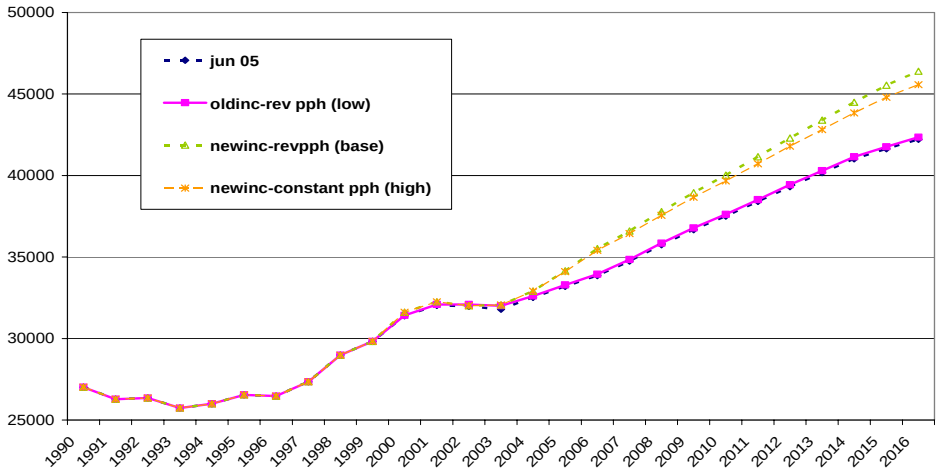
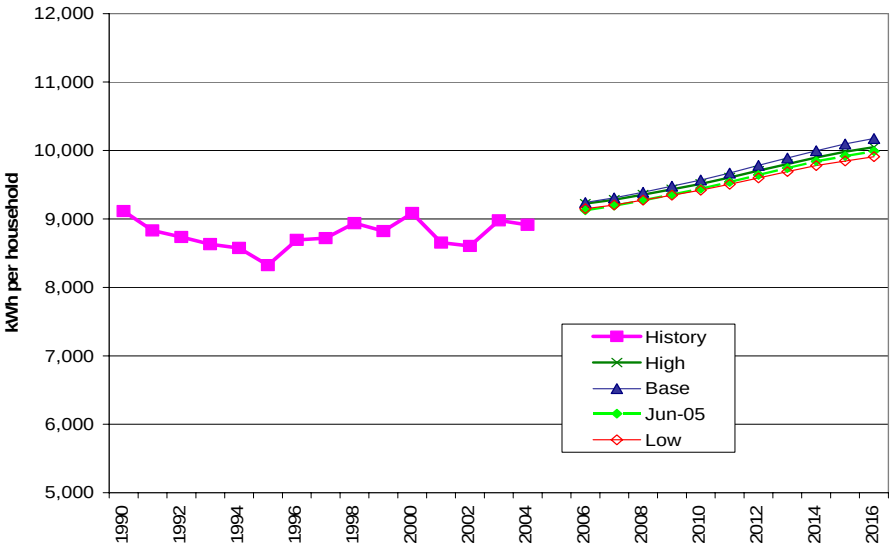


Figure 5-10 presents a comparison of electricity use per household for each of the scenarios as well as the June 2005 forecasted values. Use per household is a function of total residential consumption and total households. The baseline use per household is slightly higher than the other cases due to higher persons per household and household income used to develop that scenario.

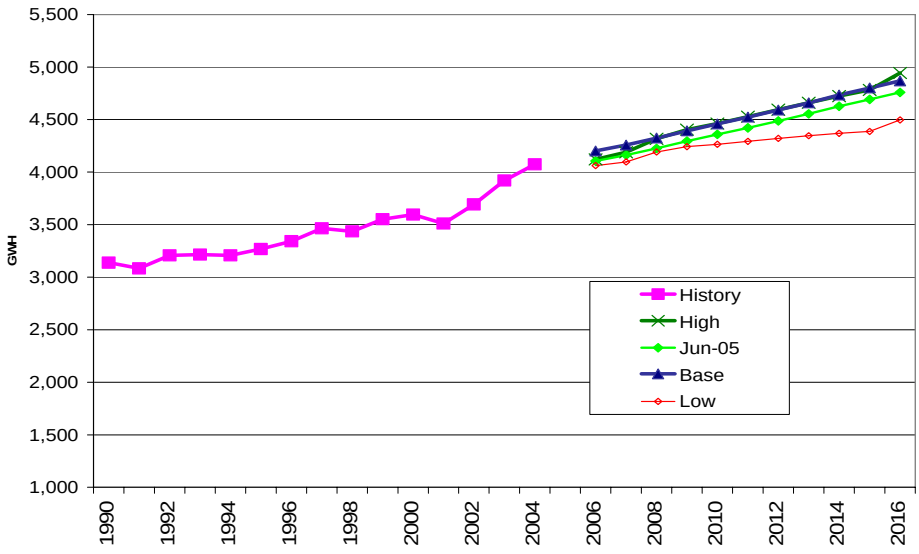
Figure 5-10: SMUD Planning Area Electricity Use per Household



Commercial Building Sector

Figure 5-11 provides a comparison of the commercial building sector forecasts. The high case reflects an assumption of constant use per square foot over the forecast period while both the base and low cases project a decline in use per square foot due to improved efficiency brought about by building and appliance standards and technology improvements.

Figure 5-11: SMUD Planning Area Commercial Building Consumption



In staff's commercial building sector forecasting model, floorspace by building type (e.g. retail, offices, schools, hospitals, etc) is the key driver of electricity growth. Figure 5-12 provides a comparison of total commercial floorspace projections. The CED 2006 floorspace projections are higher over the forecast period than those used in CED 2003. Floorspace projections were unchanged for the revised forecast scenarios.

Figure 5-12: SMUD Planning Area Commercial Floorspace

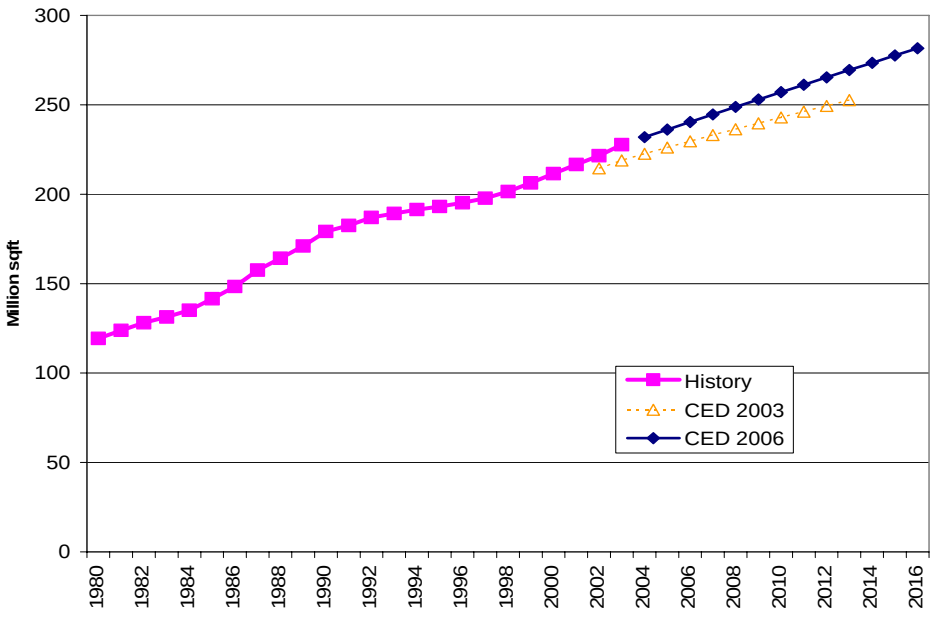
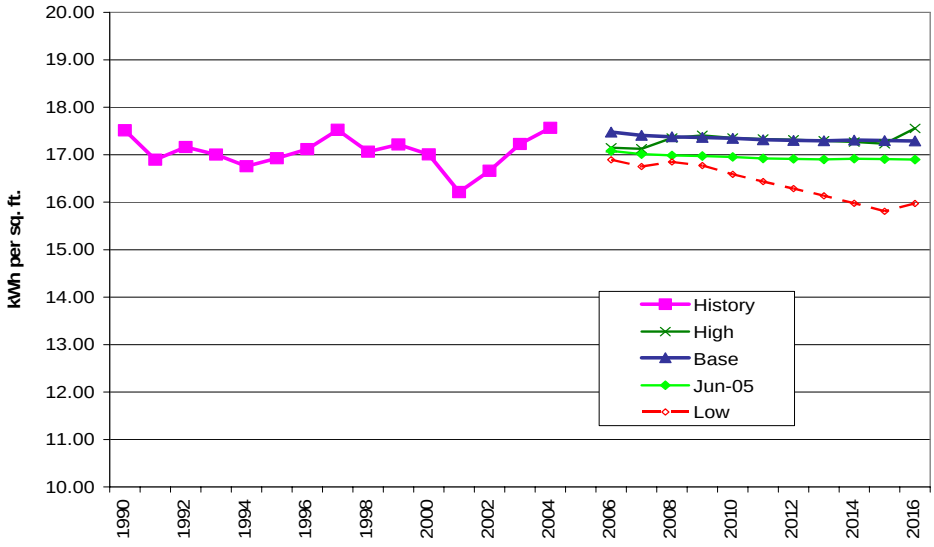


Figure 5-13 provides a comparison of use per square foot of commercial floorspace. In the base case, projected use per square foot is higher over the entire period than the June forecast due to an adjustment up for actual 2004 consumption values. As in the June forecast, use per square foot is projected to decline slightly for the base case due to building and appliance standards. In the high case, use per square foot is projected to remain relatively constant.

Figure 5-13: SMUD Planning Area Commercial kWh per Square Foot



Industrial Sector

Figure 5-14 provides comparisons of the SMUD planning area industrial sector electricity consumption forecasts. The base case industrial forecast is lower due to inclusion of 2004 consumption data and increases at a slightly slower rate than the June 2005 forecast due to an assumed decrease in kWh per unit of production compared to the values used previously.

Figure 5-14: SMUD Planning Area Industrial Consumption

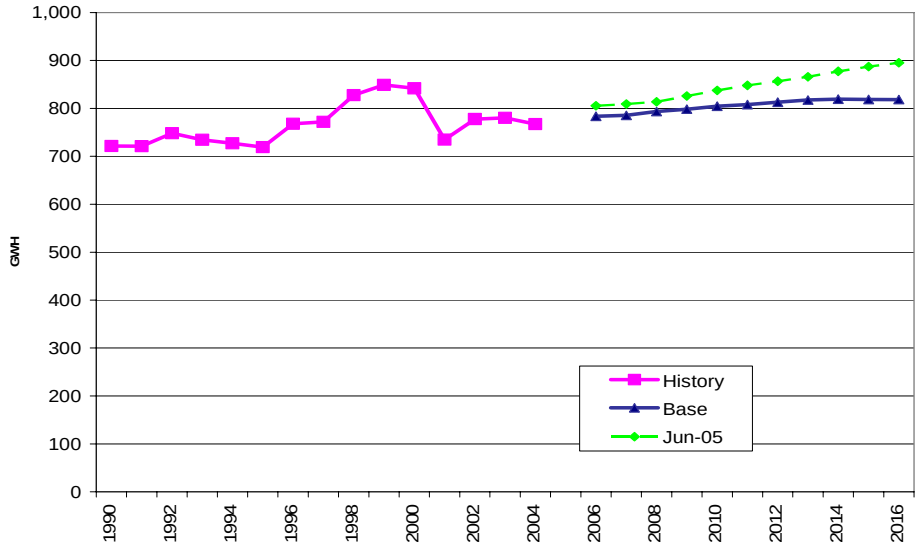
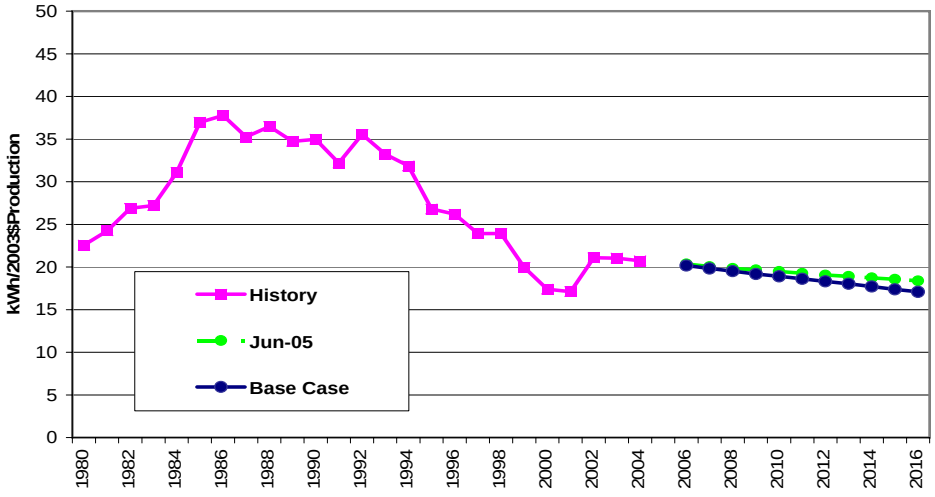


Figure 5-15 provides a comparison of use per dollar value of production between the June 2005 and revised forecast. For the revised forecast, kWh per dollar of industrial value added is projected to decline at a slightly faster rate than was assumed in the June forecast.

Figure 5-15: SMUD Planning Area
Industrial Use per Production Unit



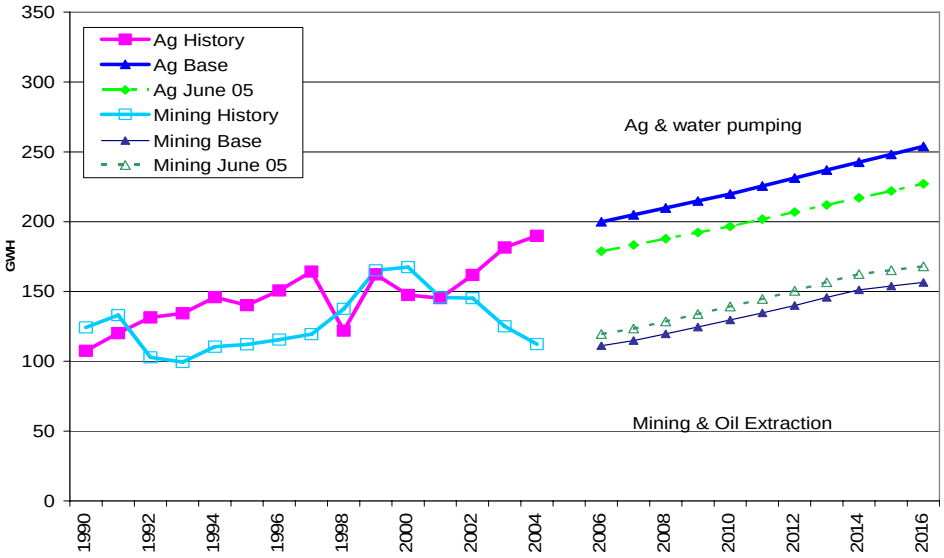
Other Sectors

Figures 5-16 and 5-17 provide comparisons of the remaining sector electricity consumption forecasts. Figure 5-16 provides a comparison of the transportation, communication and utilities (TCU) sector forecasts. The baseline TCU sector forecast is lower than the June 2005 forecast due to a lower starting point as indicated by inclusion of 2004 consumption data. The forecasted growth rate has not changed from the June 2005 forecast.

Figure 5-16: SMUD Planning Area Transportation, Communication & Utilities Sector Electricity Consumption

Figure 5-17 provides of the agriculture and water pumping and mining and oil extraction sector forecasts. Changes in both of these forecasts are due to inclusion of 2004 consumption data which change the starting points fore the respective forecasts.

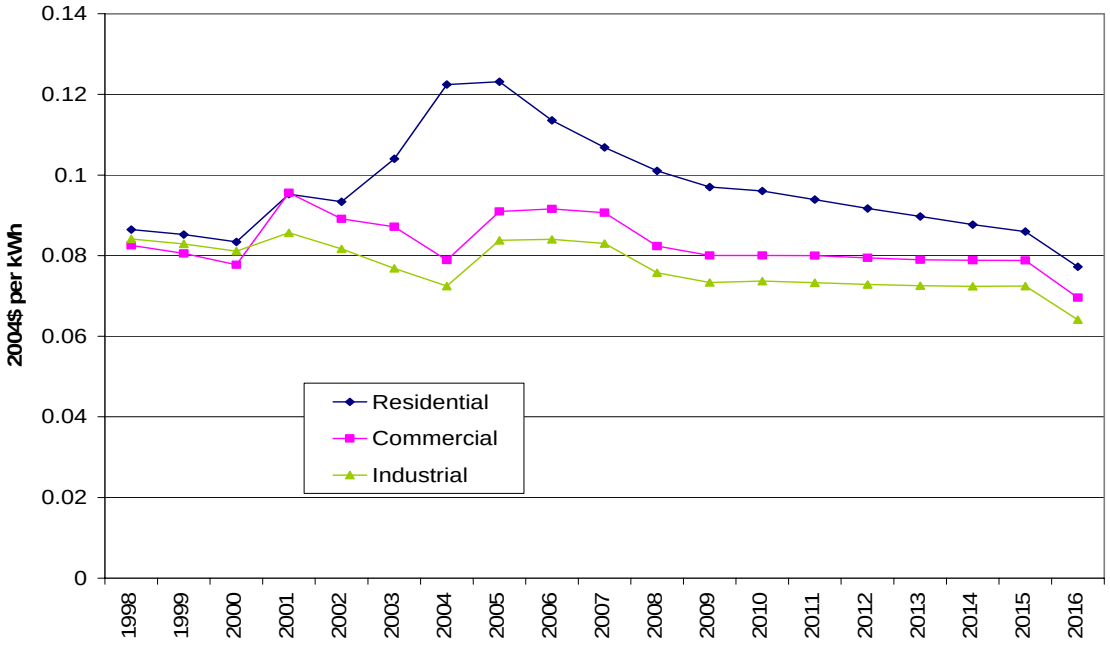
Figure 5-17: SMUD Planning Area
Agriculture & Water Pumping and Mining & Oil Extraction
Electricity Consumption Forecasts



Electricity Prices

Figure 5-21 shows the sector prices used in the forecasts for the SMUD planning area. These electricity prices are based on information provided by SMUD and were not changed for the revised scenarios.

Figure 5-21
SMUD Planning Area Prices



Form 1.1 - SMUD
Electricity Consumption by Sector (GWh)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighti ng	Total Consumption
1980	2,587	1,994	274	52	111	278	56	5,352
1981	2,794	2,064	278	59	122	322	56	5,695
1982	2,781	2,071	297	58	107	311	58	5,683
1983	2,910	2,102	332	67	94	396	56	5,956
1984	3,086	2,200	420	75	113	415	53	6,362
1985	3,193	2,428	538	79	115	476	56	6,884
1986	3,107	2,543	607	73	102	528	57	7,016
1987	3,229	2,749	636	80	115	552	59	7,419
1988	3,326	2,969	688	39	21	574	60	7,677
1989	3,359	3,046	679	133	98	550	62	7,927
1990	3,611	3,138	721	124	107	589	67	8,358
1991	3,603	3,083	721	133	120	620	68	8,349
1992	3,626	3,208	748	103	131	611	68	8,496
1993	3,636	3,216	734	100	134	547	68	8,435
1994	3,662	3,207	727	110	146	495	71	8,418
1995	3,604	3,268	719	112	140	542	72	8,458
1996	3,808	3,342	768	116	151	547	75	8,805
1997	3,839	3,464	772	119	164	572	75	9,006
1998	3,959	3,437	828	138	122	564	75	9,123
1999	3,966	3,551	849	165	162	553	80	9,326
2000	4,135	3,596	842	167	147	523	81	9,491
2001	4,019	3,511	735	146	145	436	79	9,070
2002	4,087	3,692	778	145	162	441	79	9,383
2003	4,361	3,921	780	125	181	476	80	9,924
2004	4,426	4,074	767	112	190	501	80	10,150
2006	4,800	4,201	784	111	200	526	84	10,706
2007	4,942	4,258	785	115	205	539	85	10,929
2008	5,093	4,324	793	120	210	551	87	11,178
2009	5,249	4,393	798	124	215	564	89	11,432
2010	5,408	4,460	805	130	220	576	90	11,688
2011	5,597	4,524	808	135	226	591	92	11,971
2012	5,793	4,591	813	140	231	605	93	12,267
2013	5,991	4,659	817	146	237	620	95	12,566
2014	6,190	4,734	819	151	243	635	97	12,869
2015	6,386	4,801	819	154	248	650	98	13,156
2016	6,573	4,869	818	157	254	664	100	13,435
Annual Growth Rates (%)								
1980-1990	3.4	4.6	10.2	9.1	-0.4	7.8	1.8	4.6
1990-2000	1.4	1.4	1.6	3.0	3.2	-1.2	1.9	1.3
2000-2004	1.7	3.2	-2.3	-9.5	6.5	-1.1	-0.4	1.7
2004-2008	3.6	1.5	0.8	1.6	2.5	2.4	2.2	2.4
2008-2016	3.2	1.5	0.4	3.4	2.4	2.4	1.8	2.3
2004-2016	3.4	1.5	0.5	2.8	2.4	2.4	1.9	2.4

Form 1.1b - SMUD
Electricity Consumption by Sector (GWh)
High Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighting	Total Consumption
1980	2,587	1,994	274	52	111	278	56	5,352
1981	2,794	2,064	278	59	122	322	56	5,695
1982	2,781	2,071	297	58	107	311	58	5,683
1983	2,910	2,102	332	67	94	396	56	5,956
1984	3,086	2,200	420	75	113	415	53	6,362
1985	3,193	2,428	538	79	115	476	56	6,884
1986	3,107	2,543	607	73	102	528	57	7,016
1987	3,229	2,749	636	80	115	552	59	7,419
1988	3,326	2,969	688	39	21	574	60	7,677
1989	3,359	3,046	679	133	98	550	62	7,927
1990	3,611	3,138	721	124	107	589	67	8,358
1991	3,603	3,083	721	133	120	620	68	8,349
1992	3,626	3,208	748	103	131	611	68	8,496
1993	3,636	3,216	734	100	134	547	68	8,435
1994	3,662	3,207	727	110	146	495	71	8,418
1995	3,604	3,268	719	112	140	542	72	8,458
1996	3,808	3,342	768	116	151	547	75	8,805
1997	3,839	3,464	772	119	164	572	75	9,006
1998	3,959	3,437	828	138	122	564	75	9,123
1999	3,966	3,551	849	165	162	553	80	9,326
2000	4,135	3,596	842	167	147	523	81	9,491
2001	4,019	3,511	735	146	145	436	79	9,070
2002	4,087	3,692	778	145	162	441	79	9,383
2003	4,361	3,921	780	125	181	476	80	9,924
2004	4,426	4,074	767	112	190	501	80	10,150
2006	4,806	4,122	787	111	200	526	84	10,636
2007	4,950	4,189	791	115	205	539	85	10,874
2008	5,104	4,317	803	120	210	551	87	11,192
2009	5,263	4,404	815	124	215	564	89	11,473
2010	5,424	4,462	825	130	220	576	90	11,727
2011	5,616	4,528	833	135	226	591	92	12,020
2012	5,816	4,594	842	140	231	605	93	12,322
2013	6,017	4,660	853	146	237	620	95	12,628
2014	6,219	4,723	863	151	243	635	97	12,930
2015	6,418	4,783	870	154	248	650	98	13,222
2016	6,609	4,943	877	157	254	664	100	13,604
Annual Growth Rates (%)								
1980-1990	3.4	4.6	10.2	9.1	-0.4	7.8	1.8	4.6
1990-2000	1.4	1.4	1.6	3.0	3.2	-1.2	1.9	1.3
2000-2004	1.7	3.2	-2.3	-9.5	6.5	-1.1	-0.4	1.7
2004-2008	3.6	1.5	1.2	1.6	2.5	2.4	2.2	2.5
2008-2016	3.3	1.7	1.1	3.4	2.4	2.4	1.8	2.5
2004-2016	3.4	1.6	1.1	2.8	2.4	2.4	1.9	2.5

Form 1.1c- SMUD
Electricity Consumption by Sector (GWh)
Low Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighti ng	Total Consumption
1980	2,587	1,994	274	52	111	278	56	5,352
1981	2,794	2,064	278	59	122	322	56	5,695
1982	2,781	2,071	297	58	107	311	58	5,683
1983	2,910	2,102	332	67	94	396	56	5,956
1984	3,086	2,200	420	75	113	415	53	6,362
1985	3,193	2,428	538	79	115	476	56	6,884
1986	3,107	2,543	607	73	102	528	57	7,016
1987	3,229	2,749	636	80	115	552	59	7,419
1988	3,326	2,969	688	39	21	574	60	7,677
1989	3,359	3,046	679	133	98	550	62	7,927
1990	3,611	3,138	721	124	107	589	67	8,358
1991	3,603	3,083	721	133	120	620	68	8,349
1992	3,626	3,208	748	103	131	611	68	8,496
1993	3,636	3,216	734	100	134	547	68	8,435
1994	3,662	3,207	727	110	146	495	71	8,418
1995	3,604	3,268	719	112	140	542	72	8,458
1996	3,808	3,342	768	116	151	547	75	8,805
1997	3,839	3,464	772	119	164	572	75	9,006
1998	3,959	3,437	828	138	122	564	75	9,123
1999	3,966	3,551	849	165	162	553	80	9,326
2000	4,135	3,596	842	167	147	523	81	9,491
2001	4,019	3,511	735	146	145	436	79	9,070
2002	4,087	3,692	778	145	162	441	79	9,383
2003	4,361	3,921	780	125	181	476	80	9,924
2004	4,496	4,011	789	121	170	488	81	10,156
2006	4,751	4,106	809	119	179	513	84	10,562
2007	4,892	4,162	814	123	183	525	85	10,785
2008	5,043	4,226	826	129	188	537	87	11,035
2009	5,196	4,294	838	134	192	549	89	11,291
2010	5,351	4,359	848	139	197	562	90	11,545
2011	5,536	4,421	856	145	202	576	92	11,828
2012	5,728	4,488	866	150	207	590	93	12,122
2013	5,921	4,554	877	157	212	605	95	12,420
2014	6,114	4,627	887	162	217	619	97	12,723
2015	6,294	4,693	895	165	222	633	98	13,001
2016	6,472	4,758	901	168	227	648	100	13,275
Annual Growth Rates (%)								
1980-1990	3.4	4.6	10.2	9.1	-0.4	7.8	1.8	4.6
1990-2000	1.4	1.4	1.6	3.0	3.2	-1.2	1.9	1.3
2000-2004	2.1	2.8	-1.6	-7.8	3.6	-1.7	0.0	1.7
2004-2008	2.9	1.3	1.2	1.6	2.5	2.4	1.8	2.1
2008-2016	3.2	1.5	1.1	3.4	2.4	2.4	1.8	2.3
2004-2016	3.1	1.4	1.1	2.8	2.4	2.4	1.8	2.3

Form 1.2 - SMUD
Net Energy for Load (GWh)
Base Case

Year	Total Consumption	Net Losses	Gross Generation	Private Supply	Net Energy for Load
1980	5,352	343	5,695	0	5,695
1981	5,695	364	6,059	0	6,059
1982	5,683	364	6,047	0	6,047
1983	5,956	381	6,337	0	6,337
1984	6,362	407	6,769	0	6,769
1985	6,884	441	7,325	0	7,325
1986	7,016	449	7,465	0	7,465
1987	7,419	475	7,894	0	7,894
1988	7,677	491	8,168	0	8,168
1989	7,927	507	8,434	0	8,434
1990	8,358	535	8,893	0	8,893
1991	8,349	534	8,884	0	8,884
1992	8,496	544	9,040	0	9,040
1993	8,435	540	8,974	0	8,974
1994	8,418	539	8,957	0	8,957
1995	8,458	541	8,999	0	8,999
1996	8,805	564	9,369	0	9,369
1997	9,006	576	9,583	0	9,583
1998	9,123	584	9,707	0	9,707
1999	9,326	597	9,923	0	9,923
2000	9,491	607	10,098	0	10,098
2001	9,070	580	9,651	0	9,651
2002	9,383	601	9,984	0	9,984
2003	9,924	635	10,559	0	10,559
2004	10,150	650	10,800	0	10,800
2006	10,706	685	11,391	0	11,391
2007	10,929	699	11,629	0	11,629
2008	11,178	715	11,893	0	11,893
2009	11,432	732	12,164	0	12,164
2010	11,688	748	12,436	0	12,436
2011	11,971	766	12,737	0	12,737
2012	12,267	785	13,053	0	13,053
2013	12,566	804	13,370	0	13,370
2014	12,869	824	13,693	0	13,693
2015	13,156	842	13,998	0	13,998
2016	13,435	860	14,295	0	14,295

Annual Growth Rates (%)

1980-1990	4.6	4.6	4.6	4.6
1990-2000	1.3	1.3	1.3	1.3
2000-2004	1.7	1.7	1.7	1.7
2004-2008	2.4	2.4	2.4	2.4
2008-2016	2.3	2.3	2.3	2.3
2004-2016	2.4	2.4	2.4	2.4

Form 1.3 -SMUD
End User Peak Demand by Sector (MW)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	Other	Total Consumption
1980	875	466	35	11	16	41	1,445
1981	917	474	30	10	13	40	1,484
1982	795	464	37	11	14	44	1,365
1983	877	502	44	13	13	58	1,506
1984	901	542	54	15	15	59	1,586
1985	926	583	78	18	17	76	1,698
1986	939	565	68	12	10	54	1,648
1987	939	603	77	15	15	62	1,710
1988	1,132	656	79	7	6	56	1,937
1989	1,053	600	77	23	11	68	1,831
1990	1,165	651	86	22	12	76	2,013
1991	1,141	644	88	23	13	78	1,987
1992	1,044	672	97	18	15	82	1,929
1993	1,115	651	96	17	15	73	1,968
1994	1,012	658	100	21	17	67	1,875
1995	1,124	697	103	21	16	77	2,039
1996	1,234	733	102	20	16	72	2,177
1997	1,242	769	108	22	19	80	2,240
1998	1,327	813	124	26	15	85	2,390
1999	1,533	753	122	28	18	77	2,531
2000	1,389	852	116	26	14	69	2,466
2001	1,372	715	98	22	15	57	2,279
2002	1,501	827	112	26	19	65	2,549
2003	1,522	837	106	23	20	69	2,577
2004	1,494	837	103	21	19	69	2,543
2005	1,588	869	107	21	20	74	2,677
2006	1,637	882	107	21	20	75	2,743
2007	1,683	893	107	22	20	77	2,804
2008	1,734	907	109	23	21	79	2,872
2009	1,786	921	109	24	21	81	2,942
2010	1,840	934	110	25	22	83	3,014
2011	1,905	947	111	26	22	85	3,095
2012	1,972	960	112	27	23	87	3,180
2013	2,040	975	112	28	23	89	3,267
2014	2,108	990	113	30	23	91	3,354
2015	2,177	1,003	113	30	24	93	3,440
2016	2,240	1,017	113	31	24	95	3,520

Annual Growth Rates (%)

1980-1990	2.9	3.4	9.4	7.5	-2.7	6.3	3.4
1990-2000	1.8	2.7	3.0	1.3	1.5	-1.0	2.0
2000-2004	1.9	-0.4	-3.1	-5.0	7.3	-0.1	0.8
2004-2008	3.8	2.0	1.4	2.7	2.5	3.4	3.1
2008-2016	3.3	1.4	0.4	3.6	1.9	2.4	2.6
2004-2016	3.4	1.6	0.8	3.3	2.1	2.7	2.7

Form 1.4 - SMUD
Peak Demand (MW)
Base Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	1,445	133	1,578	0	1,578	41.2
1981	1,484	137	1,621	0	1,621	42.7
1982	1,365	126	1,491	0	1,491	46.3
1983	1,506	139	1,645	0	1,645	44.0
1984	1,586	146	1,732	0	1,732	44.6
1985	1,698	156	1,854	0	1,854	45.1
1986	1,648	152	1,800	0	1,800	47.4
1987	1,710	157	1,867	0	1,867	48.3
1988	1,937	178	2,115	0	2,115	44.1
1989	1,831	168	1,999	0	1,999	48.2
1990	2,013	185	2,198	0	2,198	46.2
1991	1,987	183	2,170	0	2,170	46.7
1992	1,929	177	2,106	0	2,106	49.0
1993	1,968	181	2,149	0	2,149	47.7
1994	1,875	172	2,047	0	2,047	49.9
1995	2,039	188	2,227	0	2,227	46.1
1996	2,177	200	2,377	0	2,377	45.0
1997	2,240	206	2,446	0	2,446	44.7
1998	2,390	220	2,610	0	2,610	42.5
1999	2,531	233	2,764	0	2,764	41.0
2000	2,466	227	2,693	0	2,693	42.8
2001	2,279	210	2,489	0	2,489	44.3
2002	2,549	235	2,784	0	2,784	40.9
2003	2,577	237	2,814	0	2,814	42.8
2004	2,543	234	2,777	0	2,777	44.4
2006	2,743	252	2,995	0	2,995	43.4
2007	2,804	258	3,062	0	3,062	43.4
2008	2,872	264	3,136	0	3,136	43.3
2009	2,942	271	3,213	0	3,213	43.2
2010	3,014	277	3,291	0	3,291	43.1
2011	3,095	285	3,380	0	3,380	43.0
2012	3,180	293	3,473	0	3,473	42.9
2013	3,267	301	3,567	0	3,567	42.8
2014	3,354	309	3,663	0	3,663	42.7
2015	3,440	316	3,757	0	3,757	42.5
2016	3,520	324	3,844	0	3,844	42.5
Annual Growth Rates (%)						
1980-1990	3.4	3.4	3.4		3.4	1.1
1990-2000	2.0	2.0	2.0		2.0	-0.8
2000-2004	0.8	0.8	0.8		0.8	0.9
2004-2008	3.1	3.1	3.1		3.1	-0.6
2008-2016	2.6	2.6	2.6		2.6	-0.2
2004-2016	2.7	2.7	2.7		2.7	-0.4

Form 1.4 - SMUD
Peak Demand (MW)
High Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	1,774	163	1,937	0	1,937	33.6
1981	1,913	176	2,089	0	2,089	33.1
1982	1,847	170	2,017	0	2,017	34.2
1983	1,819	167	1,986	0	1,986	36.4
1984	2,095	193	2,288	0	2,288	33.8
1985	2,052	189	2,241	0	2,241	37.3
1986	2,116	195	2,310	0	2,310	36.9
1987	2,251	207	2,458	0	2,458	36.7
1988	2,534	233	2,767	0	2,767	33.7
1989	2,411	222	2,633	0	2,633	36.6
1990	2,666	245	2,912	0	2,912	34.9
1991	2,894	266	3,160	0	3,160	32.1
1992	3,106	286	3,392	0	3,392	30.4
1993	2,790	257	3,046	0	3,046	33.6
1994	3,123	287	3,410	0	3,410	30.0
1995	3,112	286	3,398	0	3,398	30.2
1996	3,156	290	3,447	0	3,447	31.0
1997	3,544	326	3,870	0	3,870	28.3
1998	3,672	338	4,010	0	4,010	27.6
1999	3,341	307	3,648	0	3,648	31.1
2000	3,167	291	3,459	0	3,459	33.3
2001	2,976	274	3,249	0	3,249	33.9
2002	3,424	315	3,739	0	3,739	30.5
2003	3,621	333	3,954	0	3,954	30.5
2004	3,815	351	4,166	0	4,166	29.6
2006	4,004	368	4,372	0	4,372	29.5
2007	4,074	375	4,448	0	4,448	29.7
2008	4,155	382	4,538	0	4,538	30.0
2009	4,227	389	4,616	0	4,616	30.2
2010	4,298	395	4,693	0	4,693	30.3
2011	4,368	402	4,769	0	4,769	30.6
2012	4,439	408	4,847	0	4,847	30.9
2013	4,510	415	4,925	0	4,925	31.1
2014	4,581	421	5,002	0	5,002	31.4
2015	4,649	428	5,077	0	5,077	31.6
2016	4,717	434	5,151	0	5,151	32.1

Annual Growth Rates (%)

1980-1990	4.2	4.2	4.2	4.2	0.4
1990-2000	1.7	1.7	1.7	1.7	-0.4
2000-2004	4.8	4.8	4.8	4.8	-2.9
2004-2008	2.2	2.2	2.2	2.2	0.3
2008-2016	1.6	1.6	1.6	1.6	0.9
2004-2016	1.8	1.8	1.8	1.8	0.7

Form 1.4 - SMUD
Peak Demand (MW)
Low Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	1,445	133	1,578	0	1,578	41.2
1981	1,484	137	1,621	0	1,621	42.7
1982	1,365	126	1,491	0	1,491	46.3
1983	1,506	139	1,645	0	1,645	44.0
1984	1,586	146	1,732	0	1,732	44.6
1985	1,698	156	1,854	0	1,854	45.1
1986	1,648	152	1,800	0	1,800	47.4
1987	1,710	157	1,867	0	1,867	48.3
1988	1,937	178	2,115	0	2,115	44.1
1989	1,831	168	1,999	0	1,999	48.2
1990	2,013	185	2,198	0	2,198	46.2
1991	1,987	183	2,170	0	2,170	46.7
1992	1,929	177	2,106	0	2,106	49.0
1993	1,968	181	2,149	0	2,149	47.7
1994	1,875	172	2,047	0	2,047	49.9
1995	2,039	188	2,227	0	2,227	46.1
1996	2,177	200	2,377	0	2,377	45.0
1997	2,240	206	2,446	0	2,446	44.7
1998	2,390	220	2,610	0	2,610	42.5
1999	2,531	233	2,764	0	2,764	41.0
2000	2,466	227	2,693	0	2,693	42.8
2001	2,279	210	2,489	0	2,489	44.3
2002	2,549	235	2,784	0	2,784	40.9
2003	2,577	237	2,814	0	2,814	42.8
2004	2,531	233	2,764	0	2,764	44.6
2006	2,698	248	2,946	0	2,946	43.5
2007	2,751	253	3,004	0	3,004	43.6
2008	2,823	260	3,082	0	3,082	43.5
2009	2,886	266	3,151	0	3,151	43.5
2010	2,944	271	3,215	0	3,215	43.6
2011	3,015	277	3,292	0	3,292	43.6
2012	3,087	284	3,371	0	3,371	43.7
2013	3,161	291	3,451	0	3,451	43.7
2014	3,232	297	3,530	0	3,530	43.8
2015	3,300	304	3,604	0	3,604	43.8
2016	3,384	311	3,695	0	3,695	43.6

Annual Growth Rates (%)

1980-1990	3.4	3.4	3.4	3.4	1.1
1990-2000	2.0	2.0	2.0	2.0	-0.8
2000-2004	0.7	0.7	0.7	0.7	1.0
2004-2008	2.8	2.8	2.8	2.8	-0.6
2008-2016	2.3	2.3	2.3	2.3	0.0
2004-2016	2.4	2.4	2.4	2.4	-0.2

Form 1.5 - SMUD
Noncoincident Peak Demand Temperature Scenarios

Year	1-in-2 Temperatures	1-in-5 Temperatures	1-in-10 Temperatures	1-in-20 Temperatures	1-in-5 Multiplier	1-in-10 Multiplier	1-in-20 Multiplier
2006	2,743	2,868	3,019	3,118	1.046	1.101	1.137
2007	2,804	2,931	3,086	3,187	1.046	1.101	1.137
2008	2,872	3,003	3,161	3,264	1.046	1.101	1.137
2009	2,942	3,076	3,238	3,344	1.046	1.101	1.137
2010	3,014	3,151	3,317	3,425	1.046	1.101	1.137
2011	3,095	3,236	3,407	3,518	1.046	1.101	1.137
2012	3,180	3,325	3,500	3,615	1.046	1.101	1.137
2013	3,267	3,416	3,595	3,713	1.046	1.101	1.137
2014	3,354	3,507	3,691	3,812	1.046	1.101	1.137
2015	3,440	3,597	3,786	3,910	1.046	1.101	1.137
2016	3,520	3,680	3,874	4,000	1.046	1.101	1.137

Form 2.2 - SMUD
Planning Area Economic and Demographic Assumptions

Year	Population	Households - Base & Low	Households - High	Per Capita Income - Low (2003$)	Per Capita Income - Base (2003$)	Per Capita Income - HIgh (2003$)	Industrial Value Added (Millions 2003$)	Commercial Floorspace (MM Sqft.)
1980	777,293	303,167	303,167	22,324	22,324	22,324	1,215	119
1981	780,352	306,447	306,447	21,981	21,981	21,981	1,145	124
1982	792,948	309,611	309,611	21,803	21,803	21,803	1,103	128
1983	825,773	317,329	317,329	22,416	22,416	22,416	1,219	131
1984	854,930	327,533	327,533	23,962	23,962	23,962	1,350	135
1985	895,717	345,209	345,209	25,145	25,145	25,145	1,454	142
1986	915,570	355,372	355,372	25,676	25,676	25,676	1,607	148
1987	931,933	364,140	364,140	25,698	25,698	25,698	1,805	158
1988	959,537	374,667	374,667	25,931	25,931	25,931	1,886	164
1989	992,208	387,052	387,052	26,571	26,571	26,571	1,956	171
1990	1,018,433	396,134	396,134	27,015	27,015	27,015	2,063	179
1991	1,051,318	407,886	407,886	26,275	26,275	26,275	2,240	182
1992	1,068,645	415,085	415,085	26,355	26,355	26,355	2,105	187
1993	1,083,913	421,153	421,153	25,737	25,737	25,737	2,210	189
1994	1,090,144	427,082	427,082	25,998	25,998	25,998	2,282	191
1995	1,095,152	432,887	432,887	26,541	26,541	26,541	2,682	193
1996	1,109,749	438,011	438,011	26,466	26,466	26,466	2,933	195
1997	1,123,820	440,189	440,189	27,351	27,351	27,351	3,225	198
1998	1,140,219	443,015	443,015	28,978	28,978	28,978	3,458	201
1999	1,179,070	449,589	449,589	29,824	29,824	29,824	4,251	206
2000	1,206,623	455,096	455,096	31,421	31,607	31,607	4,837	211
2001	1,240,393	464,415	464,415	32,091	32,255	32,255	4,291	217
2002	1,271,672	474,828	474,828	32,094	32,013	32,013	3,688	222
2003	1,298,220	485,629	485,629	32,006	32,065	32,065	3,709	228
2004	1,331,409	496,497	496,497	32,612	32,907	32,907	3,788	232
2005	1,364,600	508,026	508,780	33,284	34,152	34,101	3,899	236
2006	1,397,789	519,519	521,063	33,950	35,517	35,411	3,975	240
2007	1,430,980	530,977	533,347	34,847	36,602	36,439	4,056	245
2008	1,464,168	542,398	545,630	35,854	37,785	37,561	4,161	249
2009	1,497,358	553,787	557,913	36,784	38,950	38,662	4,259	253
2010	1,530,548	565,139	570,197	37,618	40,023	39,668	4,355	257
2011	1,569,630	578,710	584,758	38,521	41,149	40,723	4,444	261
2012	1,608,713	592,240	599,319	39,434	42,299	41,799	4,541	265
2013	1,647,797	605,728	613,880	40,300	43,396	42,819	4,641	269
2014	1,686,881	619,176	628,440	41,150	44,495	43,839	4,737	274
2015	1,725,963	632,582	643,001	41,770	45,538	44,800	4,823	278
2016	1,765,045	645,948	657,562	42,357	46,398	45,579	4,903	282
Annual Growth Rates (%)								
1980-1990	2.7	2.7	2.7	1.9	1.9	1.9	5.4	4.2
1990-2000	1.7	1.4	1.4	1.5	1.6	1.6	8.9	1.7
2000-2003	2.5	2.2	2.2	0.6	0.5	0.5	-8.5	2.5
2003-2008	2.4	2.2	2.4	2.3	3.3	3.2	2.3	1.8
2008-2016	2.4	2.2	2.4	2.1	2.6	2.4	2.1	1.6
2003-2016	2.4	2.2	2.4	2.2	2.9	2.7	2.2	1.6

Form 2.3a - SMUD
Electricity Rate Forecast (2003 cents/kwh)

Year	GDP Implicit Price Deflator	Residential	Commercial	Industrial
1990	75.49	10.88	0.00	9.32
1991	78.13	10.48	0.00	9.08
1992	79.92	10.26	0.00	8.92
1993	81.77	9.36	0.00	8.09
1994	83.51	9.60	0.00	8.35
1995	85.22	9.57	0.00	8.18
1996	86.83	9.55	0.00	8.02
1997	88.28	8.74	0.00	8.51
1998	89.26	8.65	8.26	8.41
1999	90.54	8.52	8.05	8.29
2000	92.52	8.34	7.77	8.12
2001	94.74	9.52	9.56	8.57
2002	96.31	9.34	8.91	8.17
2003	98.07	10.40	8.71	7.69
2004	100.00	12.24	7.89	7.24
2005	101.51	12.31	9.10	8.38
2006	103.64	11.36	9.16	8.40
2007	105.58	10.69	9.07	8.30
2008	107.36	10.10	8.23	7.57
2009	109.26	9.70	8.00	7.33
2010	111.24	9.60	8.00	7.37
2011	113.25	9.39	8.00	7.33
2012	115.23	9.17	7.94	7.28
2013	117.23	8.97	7.89	7.25
2014	119.25	8.77	7.89	7.24
2015	121.31	8.60	7.88	7.25
2016	123.42	7.72	6.96	6.41

Annual Growth Rates (%)

1990-2000	2.1	-2.6		-1.4
2000-2003	2.0	7.6	3.9	-1.8
2003-2008	1.8	-0.6	-1.1	-0.3
2008-2016	1.8	-3.3	-2.1	-2.1
2003-2016	1.8	-2.3	-1.7	-1.4

CHAPTER 6

LADWP PLANNING AREA

The Los Angeles Department of Water and Power (LADWP) planning area includes LADWP bundled retail customers and customers served by any energy service providers (ESP's) using the LADWP distribution system to deliver electricity to end-users.

This chapter is organized in a fashion similar to those for the other planning areas. First, the revised forecast ranges of consumption are discussed and compared to the June 2005 forecast. The forecasted load factor, jointly determined by the consumption and peak load estimates, is presented. Second, the ranges of sector consumption forecasts are presented. Third, the sector electricity prices used as inputs to the CED forecast are presented. Finally, the implications of the potential inaccuracy of historical data for the forecast are discussed.

Forecast Results

Table 6-1 presents a comparison of electricity consumption and peak demand for selected years. The new baseline forecast is slightly higher than the June 2005 forecast due to inclusion of 2004 historic data used in calibration.

Table 6-1: LADWP Planning Area Forecast Comparison

Consumption (GWH)						
	Jun-05	Low	Base	High	Percent Difference Base/Jun-05	Percent Difference High/Low
1990	23,263	23,263	23,263	23,263	0.00%	0.00%
2000	23,296	23,296	23,296	23,296	0.00%	0.00%
2004	24,714	24,864	24,864	24,864	0.61%	0.00%
2008	25,296	25,499	25,778	25,879	1.90%	1.49%
2016	25,969	25,696	26,289	26,848	1.23%	4.48%
Annual Average Growth Rates						
1990-2000	0.01%	0.01%	0.01%	0.01%		
2000-2004	1.49%	1.64%	1.64%	1.64%		
2004-2008	0.58%	0.63%	0.91%	1.01%		
2004-2016	0.41%	0.27%	0.47%	0.64%		
Peak (MW)						
	Jun-05	Low	Base	High	Percent Difference Base/Draft	Percent Difference High/Low
1990	5,281	5,281	5,281	5,281	0.00%	0.00%
2000	5,330	5,330	5,330	5,330	0.00%	0.00%
2004	5,386	5,419	5,419	5,419	0.60%	0.00%
2008	5,701	5,748	5,819	5,844	2.07%	1.66%
2016	5,841	5,777	5,927	6,059	1.48%	4.87%
Annual Average Growth Rates						
1990-2000	0.09%	0.09%	0.09%	0.09%		
2000-2004	0.26%	0.42%	0.42%	0.42%		
2004-2008	1.43%	1.49%	1.80%	1.91%		
2004-2016	0.68%	0.54%	0.75%	0.93%		
Historic values are shaded						

Figures 6-1 and 6-2 present the revised forecast ranges compared to the June 2005 baseline forecast for electricity consumption and peak demand respectively. Both the revised electricity consumption and peak demand forecasts slightly higher due to inclusion of 2004 consumption and peak data.

Figure 6-1: LADWP Planning Area Electricity Forecast

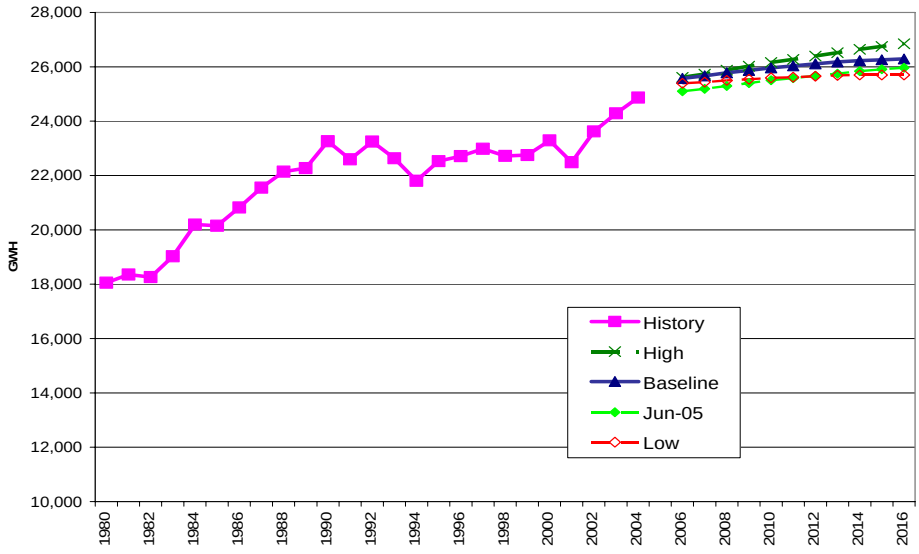
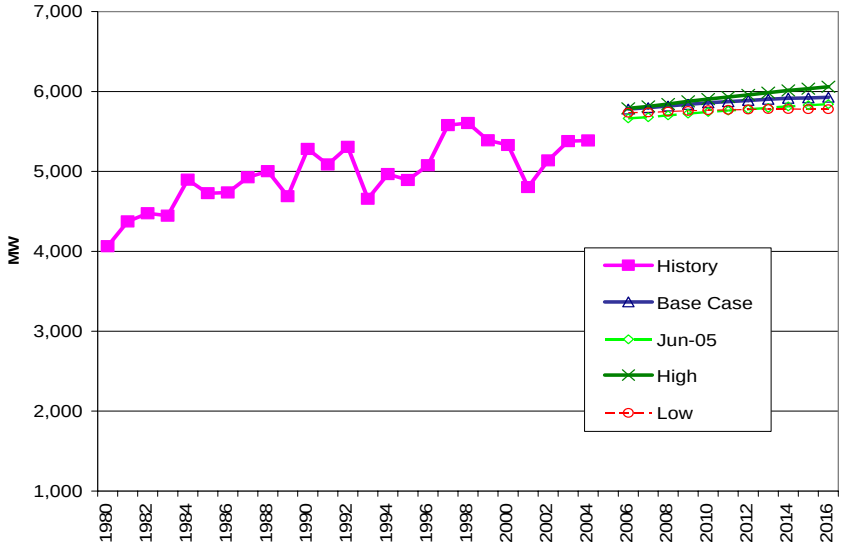
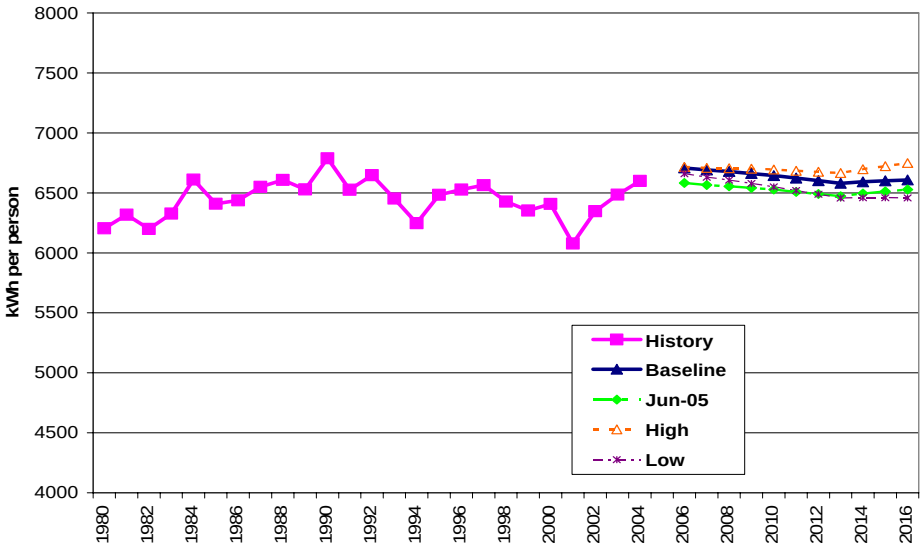


Figure 6-2: LADWP Planning Area Peak



Figures 6-3 provides a comparison of per capita electricity consumption fore the revised forecast scenarios and the June 2005 forecast. Per capita consumption is projected to remain in the range of historic per capita consumption for all of the scenarios.

Figure 6-3: LADWP Planning Area per Capita Electricity Consumption



Per capita peak demand, shown in Figure 6-4, follows a similar pattern to per capita electricity consumption.

Figure 6-4: LADWP Planning Area per Capita Peak Demand

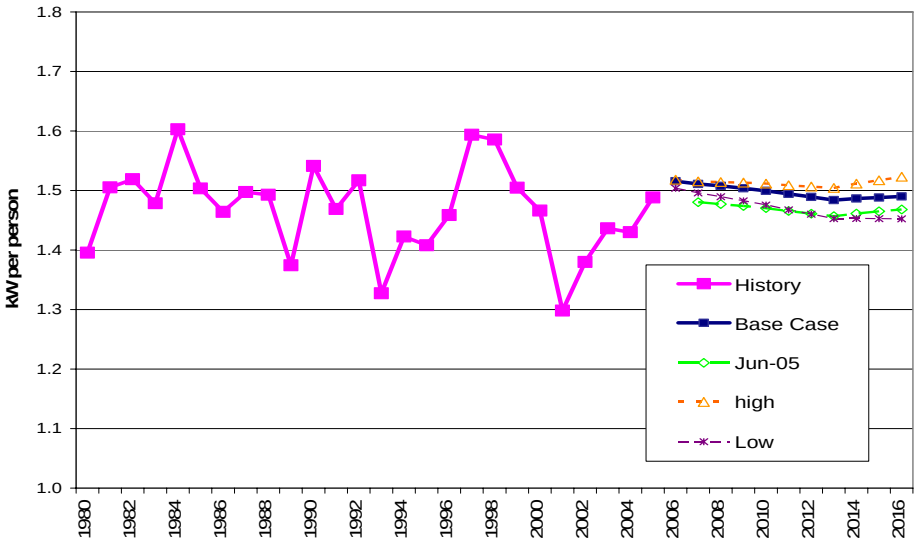
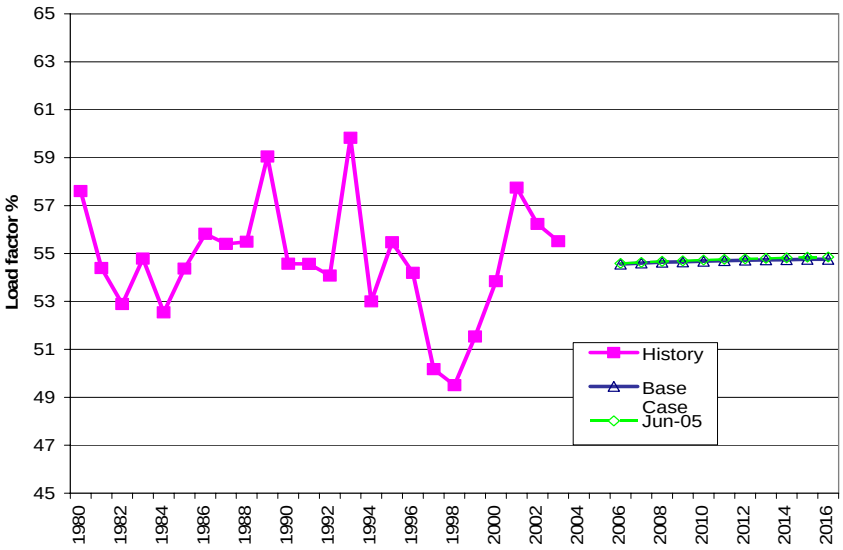


Figure 6-5 provides a comparison of the respective load factors. The load factor is a measure of the relative increase in peak demand with respect to annual electricity consumption. Lower load factors indicate more of a needle peak and higher load factors indicate a more stable load. Variation in historic load factors is caused in part by annual weather patterns. The projected load factors are relatively constant over the forecast period.

Figure 6-5: LADWP Planning Area Load Factor

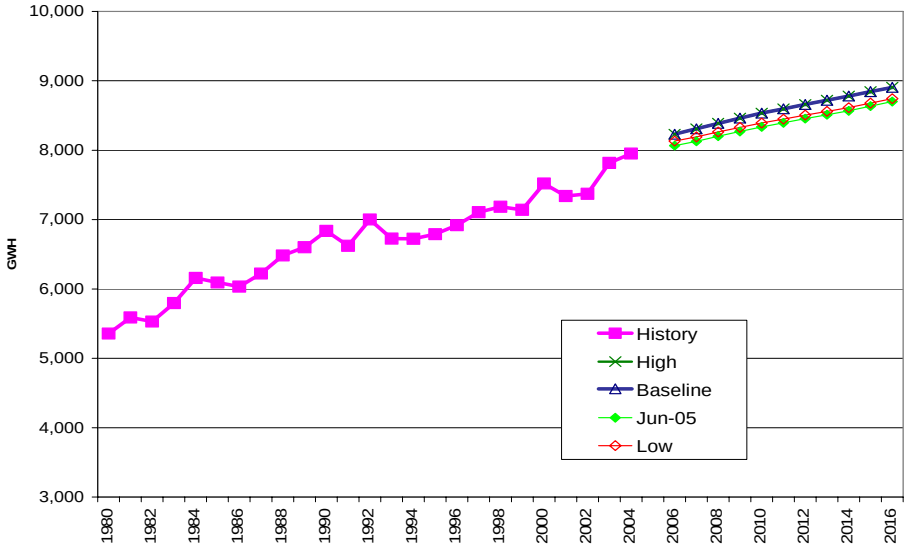


Sector Level Results and Input Assumptions

Residential

Figure 6-6 provides a comparison between the various LADWP planning area residential forecasts. The revised baseline forecast is slightly higher than the June 2005 forecast due to revised household income projections.

Figure 6-6: LADWP Planning Area Residential Consumption



Figures 6-7 and 6-8 present the household and persons per household projections used in the LADWP planning area forecast. These were not changed for the revised baseline forecast.

Figure 6-7: LADWP Planning Area Households

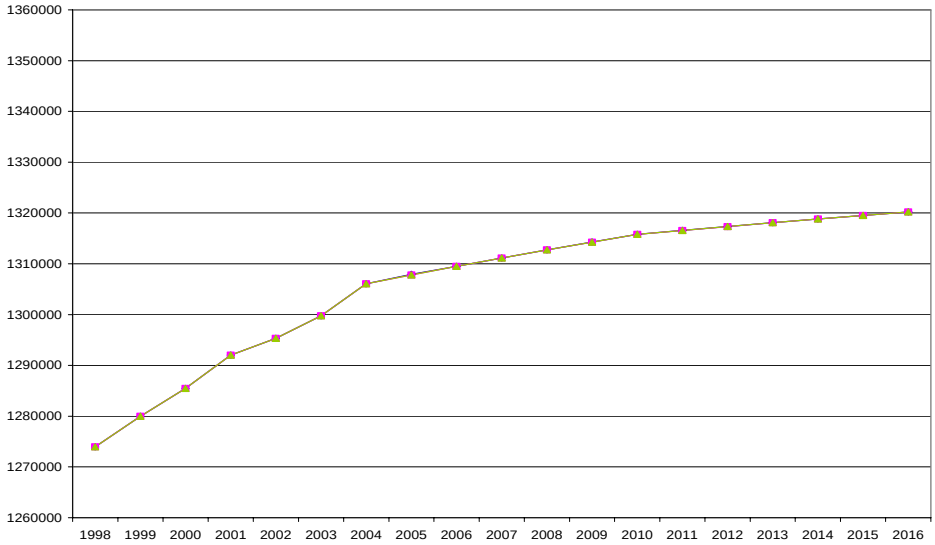


Figure 6-8: LADWP Planning Area Residential Demographic Projections

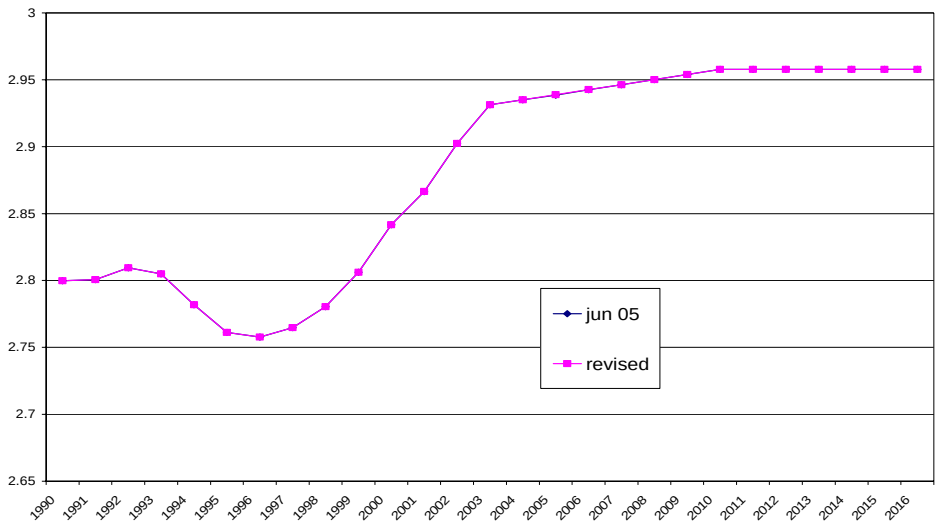


Figure 6-9 provides a comparison of household income used in the forecast scenarios. The revised baseline forecast is higher than the June 2005 forecast due to revisions in per capita income projections.

Figure 6-9: LADWP Planning Area Household Income Projections

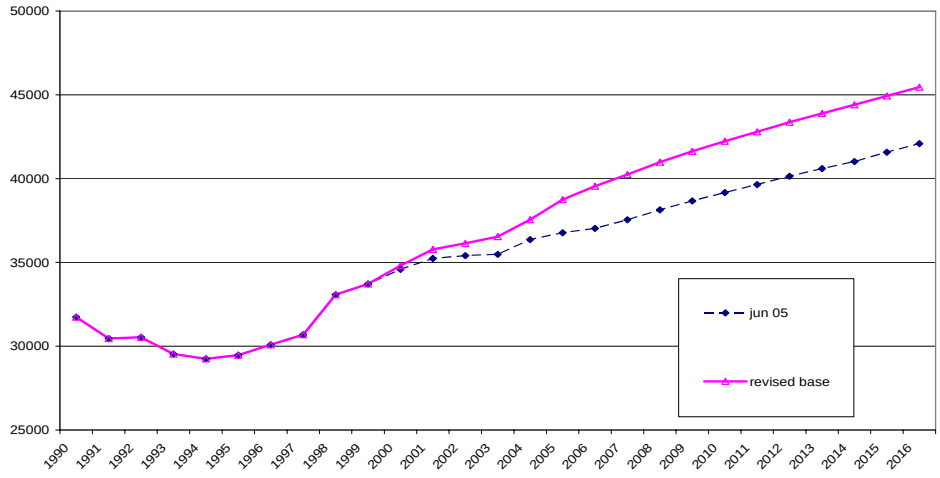
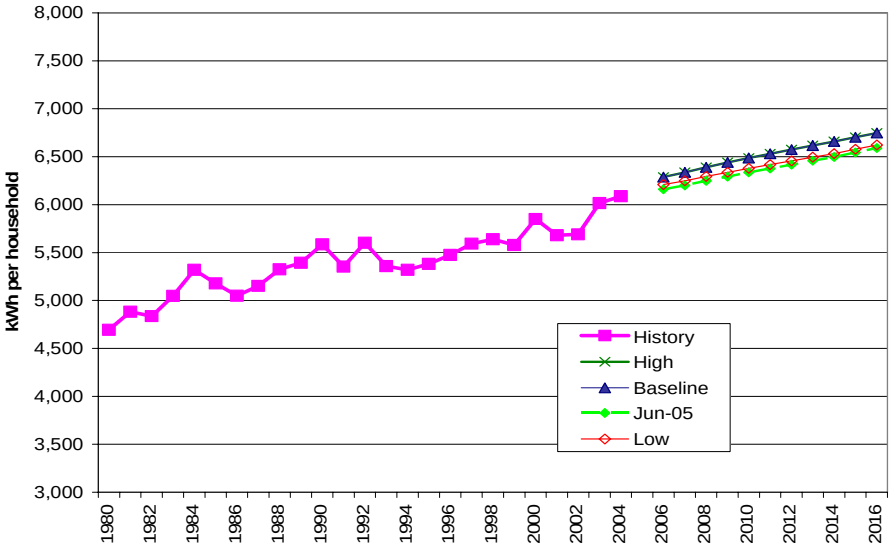


Figure 6-10 presents a comparison of use per household used in the various forecasts. The baseline use per household is higher than the June 2005 forecast due to the revision in household income mentioned previously.

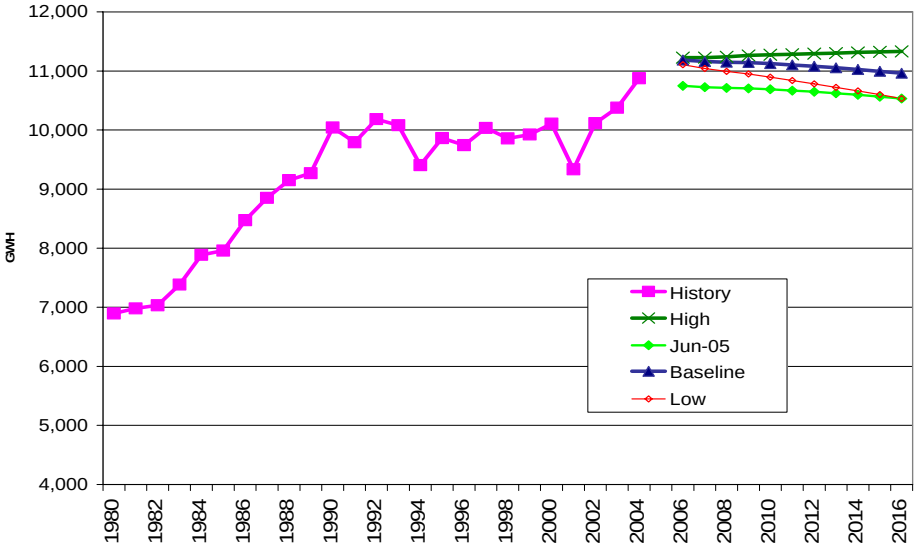
Figure 6-10: LADWP Planning Area Use per Household



Commercial Building Sector

Figure 6-11 provides a comparison of the commercial building sector forecasts.

Figure 6-11: LADWP Planning Area Commercial Consumption



In staff's commercial building sector forecasting model, floorspace by building type (e.g. retail, offices, schools, etc) is the key driver of energy demand trends. The commercial building floorspace forecast is based on the historic trend of additions in the LADWP planning area. Figure 6-12 provides a comparison of total commercial floorspace projections. For the LADWP planning area the CED 2006 floorspace projections are slightly higher than the CED 2003 floorspace projections.

Figure 6-12: LADWP Planning Area Commercial Floorspace

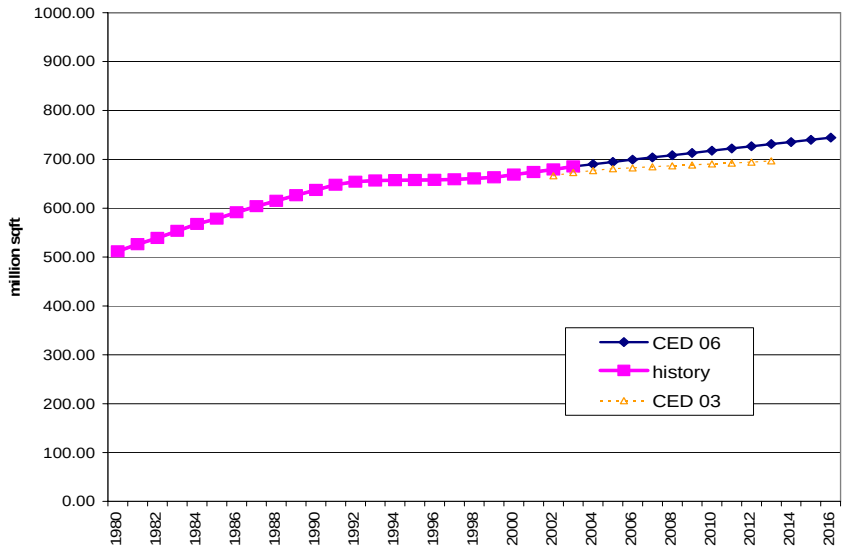
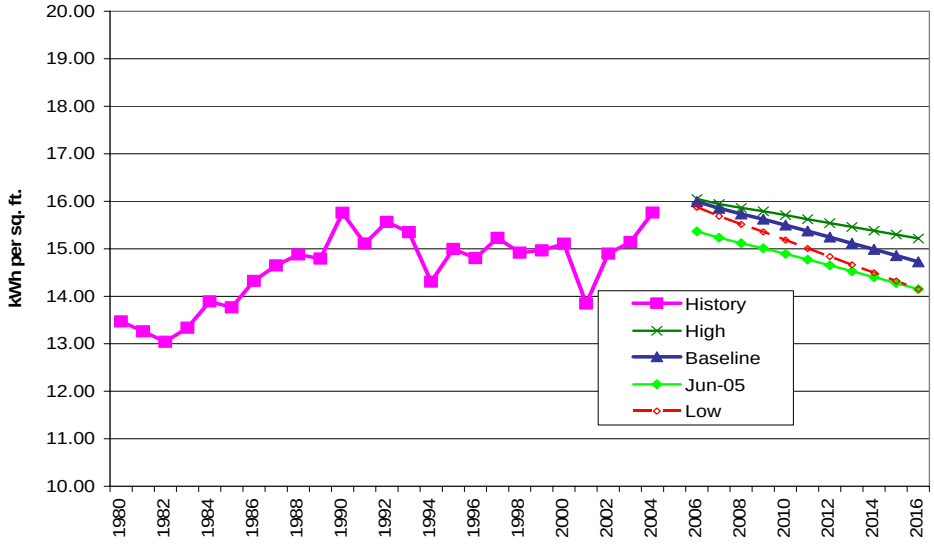


Figure 6-13 provides a comparison of kWh per square foot of commercial floorspace. In the base case, projected use per square foot is higher over the entire period than the June forecast due to an adjustment up for actual 2004 consumption values. As in the June forecast, use per square foot is projected to decline for the base case due to building and appliance standards. In the high case, use per square foot is projected to decline at a slightly slower rate.

Figure 6-13: LADWP Planning Area Commercial kWh per Square Foot



Industrial Sector

Figure 6-14 provides comparisons of the LADWP planning area industrial sector electricity consumption forecasts. The base case industrial forecast is lower due to inclusion of 2004 consumption data and increases at a slightly slower rate than the June 2005 forecast due to an assumed decrease in kWh per unit of production compared to the values used previously.

Figure 6-14: LADWP Planning Area Industrial Consumption

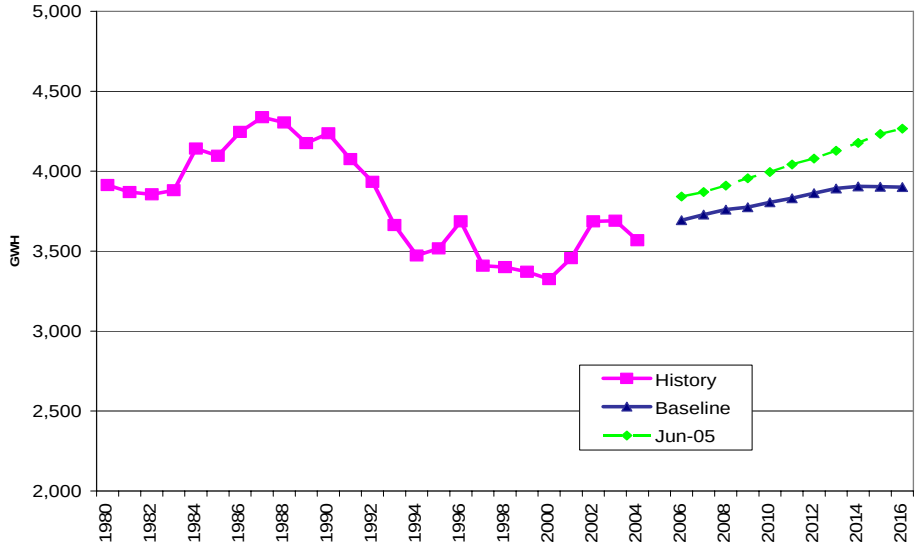
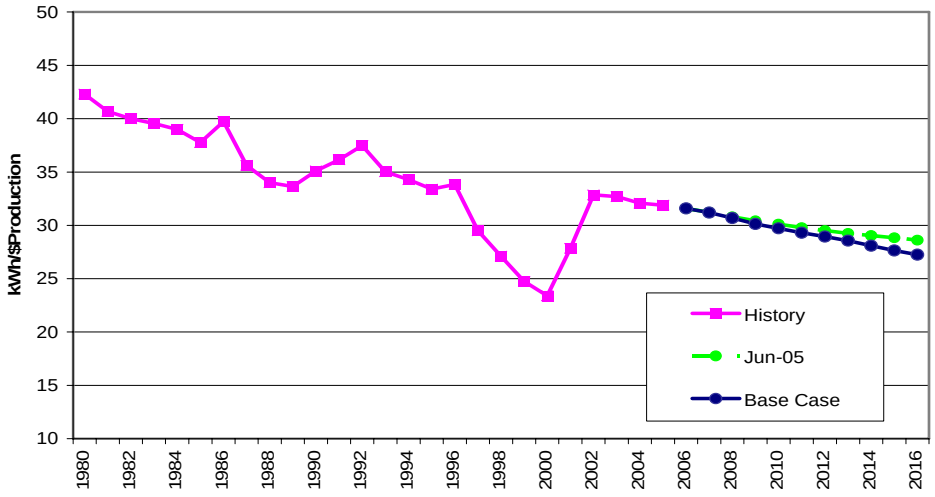


Figure 6-15 provides a comparison of use per dollar value of production between the June 2005 and revised forecast. For the revised forecast, kWh per dollar of industrial value added is projected to decline at a slightly faster rate than was assumed in the June forecast.

Figure 6-15: LADWP Planning Area Industrial Use per Production Unit



Other Sectors

Figures 6-16 and 6-17 provide comparisons of the remaining sector electricity consumption forecasts. Figure 6-16 provides a comparison of the transportation, communication and utilities (TCU) sector forecasts. The baseline TCU sector forecast is lower than the June 2005 forecast due to a lower starting point indicated by inclusion of 2004 consumption data. The forecasted growth rate has not changed from the June 2005 forecast.

Figure 6-16: LADWP Planning Area Transportation, Communication and Utilities Sector Electricity Consumption

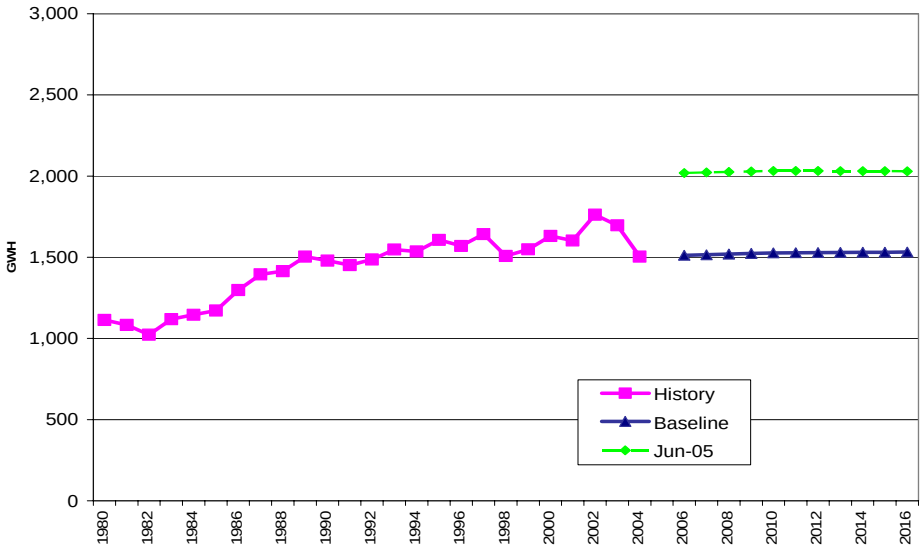
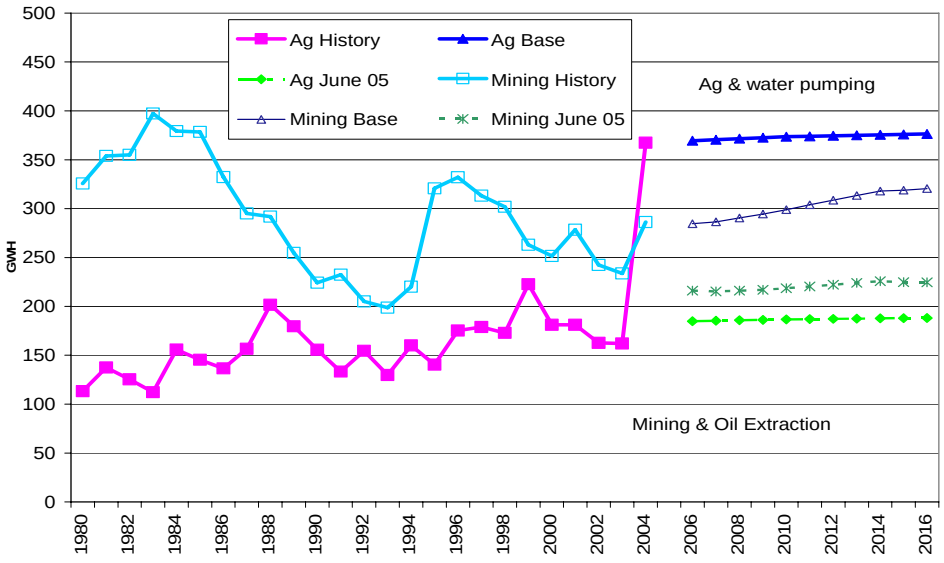


Figure 6-17 provides comparisons of the forecasts for the agriculture and water pumping and mining and oil extraction sectors. The revised base case forecast for agriculture and water pumping forecast is higher due to inclusion of 2004 consumption data. The forecasted growth rate is unchanged from the June forecast. The base case mining and oil extraction forecast is higher due to an increase in the historic starting point, and because of revisions to industrial model assumptions. At the natural gas workshop, participants questions whether TEOR gas use would decline as in the staff forecast. The June forecast projected constant use per employee, however in recent years the trend has been increasing. This may reflect the effects of higher oil and gas prices on the incentive to extract resources from wells with previously declining production, an incentive likely to continue under current resource price projections.

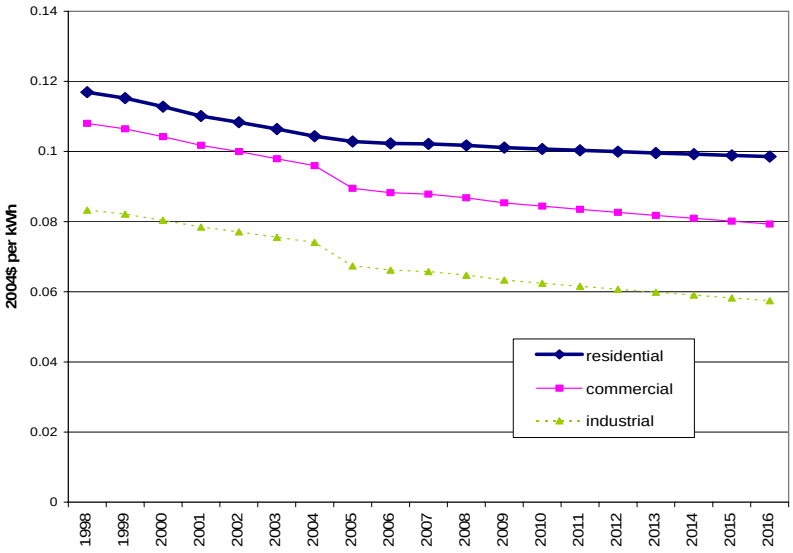
Figure 6-17: LADWP Planning Area Agriculture & Water Pumping and Mining & Oil Extraction Electricity Consumption Forecasts



Electricity Prices

Figure 6-21 shows the sector prices used in the CED 2006 forecast for the LADWP planning area. These electricity prices are based on information provided by LADWP.[1]

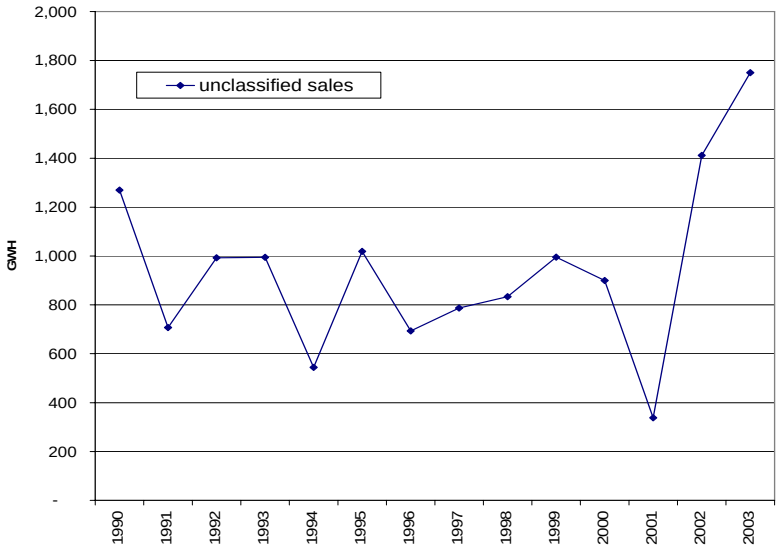
Figure 6-21: LADWP Planning Area Prices Used in Forecast



Uncertainty Introduced by Historic Data Inaccuracy

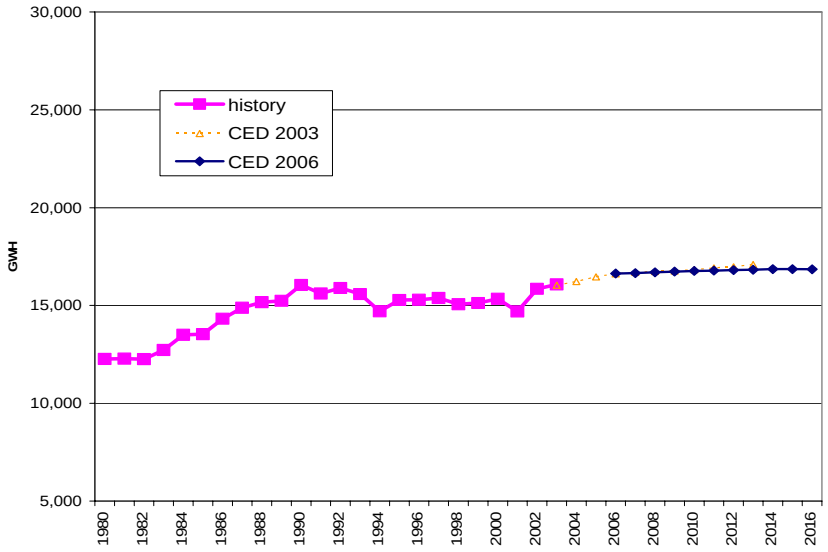
Figure 6-22 provides the recent historic values of unclassified electricity in the LADWP planning area. Recent history contains a large amount of electricity consumption which has not been classified by LSEs according to the QFER reporting requirements. In the absence of additional knowledge, this electricity consumption is allocated to the industrial, commercial and TCU sectors proportional to classified sales. If the actual sector distribution of unclassified electricity use is different than the distribution of properly classified electricity, the forecast will be negatively impacted. Since commercial and industrial customers have different load shapes misclassifying these customers could result in erroneous estimation of sector consumption, peak demand and growth rates.

Figure 6-22: LADWP Planning Area Historic Unclassified Consumption



To illustrate the implications of this problem of unclassified consumption data, Figure 6-23 provides a comparison of the CED 2006 and CED 2003 forecasts at a more aggregate level of total nonresidential consumption. This shows that there is virtually no difference in aggregate forecasts at the nonresidential level. However, in order to effectively implement efficiency and demand response programs it is important to know how nonresidential energy is used at a more disaggregate level. Staff has yet to find a solution to this apparent reporting problem. It is necessary that accurate consumption information be provided the Energy Commission if staff is to understand how energy is being used.

Figure 6-23: LADWP Planning Area Nonresidential Electricity (Commercial, Industrial, TCU and Streetlighting)



[1] All LSEs >200MW peak demand were required to provide electricity price projections by customer sector pursuant to GENERAL INSTRUCTIONS: RETAIL ELECTRICITY PRICE FORECAST ELECTRICITY DATA REQUEST 2003-2016 adopted by Commissioner order, November 3, 2004.

Form 1.1 - LADWP
Electricity Consumption by Sector (GWh)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighti ng	Total Consumption
1980	5,357	6,894	3,914	326	113	1,113	343	18,059
1981	5,587	6,979	3,869	354	137	1,083	350	18,359
1982	5,529	7,032	3,855	355	125	1,023	346	18,265
1983	5,794	7,383	3,881	397	112	1,119	343	19,029
1984	6,157	7,886	4,142	379	156	1,146	328	20,195
1985	6,092	7,960	4,096	379	145	1,172	309	20,152
1986	6,033	8,475	4,245	332	137	1,298	303	20,822
1987	6,222	8,850	4,337	295	157	1,395	297	21,552
1988	6,482	9,151	4,304	292	202	1,415	297	22,143
1989	6,601	9,268	4,175	255	180	1,505	292	22,276
1990	6,835	10,042	4,237	224	156	1,479	290	23,263
1991	6,620	9,791	4,075	232	133	1,452	292	22,595
1992	7,000	10,183	3,934	205	155	1,487	290	23,253
1993	6,726	10,080	3,663	199	130	1,548	289	22,635
1994	6,723	9,405	3,473	220	160	1,535	289	21,805
1995	6,788	9,862	3,517	321	140	1,607	290	22,526
1996	6,917	9,744	3,686	332	175	1,569	292	22,715
1997	7,106	10,035	3,409	313	179	1,643	296	22,980
1998	7,183	9,857	3,399	302	173	1,509	296	22,719
1999	7,140	9,922	3,371	263	223	1,549	284	22,751
2000	7,519	10,105	3,324	252	181	1,631	284	23,296
2001	7,339	9,334	3,456	278	181	1,603	298	22,489
2002	7,370	10,115	3,686	242	163	1,763	287	23,626
2003	7,818	10,379	3,690	234	162	1,697	305	24,285
2004	7,951	10,875	3,568	286	367	1,504	311	24,864
2006	8,232	11,184	3,694	285	370	1,512	303	25,578
2007	8,308	11,160	3,728	287	371	1,516	302	25,671
2008	8,388	11,147	3,761	290	372	1,520	301	25,778
2009	8,464	11,141	3,775	294	373	1,524	300	25,869
2010	8,535	11,123	3,805	299	374	1,527	298	25,962
2011	8,597	11,102	3,831	304	374	1,528	297	26,033
2012	8,660	11,079	3,863	309	375	1,529	296	26,111
2013	8,721	11,052	3,892	313	375	1,530	295	26,178
2014	8,782	11,025	3,905	318	375	1,531	293	26,230
2015	8,844	10,995	3,903	319	376	1,532	292	26,260
2016	8,907	10,962	3,901	321	376	1,532	291	26,289
Annual Growth Rates (%)								
1980-1990	2.5	3.8	0.8	-3.7	3.2	2.9	-1.7	2.6
1990-2000	1.0	0.1	-2.4	1.2	1.5	1.0	-0.2	0.0
2000-2004	1.4	1.9	1.8	3.3	19.3	-2.0	2.3	1.6
2004-2008	1.3	0.6	1.3	0.3	0.3	0.3	-0.8	0.9
2008-2016	0.8	-0.2	0.5	1.2	0.2	0.1	-0.4	0.2
2004-2016	1.0	0.1	0.7	0.9	0.2	0.2	-0.6	0.5

Form 1.1a - LADWP
Electricity Sales by Sector (GWh)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighting	Total Consumption
1980	5,357	6,894	3,914	326	113	1,113	343	18,059
1981	5,587	6,979	3,869	354	137	1,083	350	18,359
1982	5,529	7,032	3,855	355	125	1,023	346	18,265
1983	5,794	7,383	3,651	397	112	1,119	343	18,799
1984	6,157	7,886	3,803	379	156	1,146	328	19,856
1985	6,092	7,960	3,779	379	145	1,172	309	19,835
1986	6,033	8,475	3,863	332	137	1,257	303	20,399
1987	6,222	8,839	3,956	295	157	1,299	297	21,065
1988	6,482	9,132	3,735	292	202	1,282	297	21,423
1989	6,601	9,243	3,435	255	180	1,357	292	21,363
1990	6,835	10,008	3,426	224	156	1,306	290	22,244
1991	6,620	9,739	3,128	232	133	1,273	292	21,417
1992	7,000	10,122	3,050	205	155	1,323	290	22,145
1993	6,726	10,018	2,757	199	130	1,380	289	21,498
1994	6,723	9,133	2,434	220	160	1,349	289	20,308
1995	6,788	9,552	2,454	321	140	1,394	290	20,939
1996	6,917	9,484	2,546	332	175	1,481	292	21,228
1997	7,106	9,751	2,412	313	179	1,549	296	21,605
1998	7,183	9,573	2,405	302	173	1,480	296	21,412
1999	7,140	9,640	2,345	263	223	1,540	284	21,434
2000	7,519	9,829	2,456	252	181	1,625	284	22,146
2001	7,339	9,108	2,596	278	181	1,603	298	21,404
2002	7,370	9,875	2,638	242	163	1,716	287	22,290
2003	7,818	10,124	2,704	234	162	1,697	305	23,044
2004	7,951	10,620	2,582	286	367	1,504	311	23,622
2006	8,232	10,928	2,708	285	370	1,512	303	24,337
2007	8,308	10,905	2,742	287	371	1,516	302	24,429
2008	8,388	10,891	2,775	290	372	1,520	301	24,537
2009	8,464	10,885	2,789	294	373	1,524	300	24,627
2010	8,535	10,868	2,820	299	374	1,527	298	24,720
2011	8,597	10,847	2,845	304	374	1,528	297	24,792
2012	8,660	10,824	2,877	309	375	1,529	296	24,869
2013	8,721	10,796	2,906	313	375	1,530	295	24,937
2014	8,782	10,770	2,919	318	375	1,531	293	24,989
2015	8,844	10,739	2,917	319	376	1,532	292	25,018
2016	8,907	10,706	2,915	321	376	1,532	291	25,048
Annual Growth Rates (%)								
1980-1990	2.5	3.8	-1.3	-3.7	3.2	1.6	-1.7	2.1
1990-2000	1.0	-0.2	-3.3	1.2	1.5	2.2	-0.2	0.0
2000-2004	1.4	2.0	1.3	3.3	19.3	-1.9	2.3	1.6
2004-2008	1.3	0.6	1.8	0.3	0.3	0.3	-0.8	1.0
2008-2016	0.8	-0.2	0.6	1.2	0.2	0.1	-0.4	0.3
2004-2016	1.0	0.1	1.0	0.9	0.2	0.2	-0.6	0.5

Electricity Sales by Sector (GWh)
High Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighting	Total Consumption
1980	5,357	6,894	3,914	326	113	1,113	343	18,059
1981	5,587	6,979	3,869	354	137	1,083	350	18,359
1982	5,529	7,032	3,855	355	125	1,023	346	18,265
1983	5,794	7,383	3,651	397	112	1,119	343	18,799
1984	6,157	7,886	3,803	379	156	1,146	328	19,856
1985	6,092	7,960	3,779	379	145	1,172	309	19,835
1986	6,033	8,475	3,863	332	137	1,257	303	20,399
1987	6,222	8,839	3,956	295	157	1,299	297	21,065
1988	6,482	9,132	3,735	292	202	1,282	297	21,423
1989	6,601	9,243	3,435	255	180	1,357	292	21,363
1990	6,835	10,008	3,426	224	156	1,306	290	22,244
1991	6,620	9,739	3,128	232	133	1,273	292	21,417
1992	7,000	10,122	3,050	205	155	1,323	290	22,145
1993	6,726	10,018	2,757	199	130	1,380	289	21,498
1994	6,723	9,133	2,434	220	160	1,349	289	20,308
1995	6,788	9,552	2,454	321	140	1,394	290	20,939
1996	6,917	9,484	2,546	332	175	1,481	292	21,228
1997	7,106	9,751	2,412	313	179	1,549	296	21,605
1998	7,183	9,573	2,405	302	173	1,480	296	21,412
1999	7,140	9,640	2,345	263	223	1,540	284	21,434
2000	7,519	9,829	2,456	252	181	1,625	284	22,146
2001	7,339	9,108	2,596	278	181	1,603	298	21,404
2002	7,370	9,875	2,638	242	163	1,716	287	22,290
2003	7,818	10,124	2,704	234	162	1,697	305	23,044
2004	7,951	10,620	2,582	286	367	1,504	311	23,622
2006	8,232	10,968	2,702	285	370	1,512	303	24,370
2007	8,308	10,968	2,740	287	371	1,516	302	24,492
2008	8,388	10,983	2,783	290	372	1,520	301	24,637
2009	8,464	11,006	2,821	294	373	1,524	300	24,781
2010	8,535	11,018	2,866	299	374	1,527	298	24,917
2011	8,597	11,027	2,902	304	374	1,528	297	25,029
2012	8,661	11,038	2,948	309	375	1,529	296	25,155
2013	8,721	11,047	2,995	313	375	1,530	295	25,277
2014	8,782	11,058	3,048	318	375	1,531	293	25,406
2015	8,844	11,067	3,080	319	376	1,532	292	25,509
2016	8,907	11,074	3,105	321	376	1,532	291	25,606

Annual Growth Rates (%)

1980-1990	2.5	3.8	-1.3	-3.7	3.2	1.6	-1.7	2.1
1990-2000	1.0	-0.2	-3.3	1.2	1.5	2.2	-0.2	0.0
2000-2004	1.4	2.0	1.3	3.3	19.3	-1.9	2.3	1.6
2004-2008	1.3	0.8	1.9	0.3	0.3	0.3	-0.8	1.1
2008-2016	0.8	0.1	1.4	1.2	0.2	0.1	-0.4	0.5
2004-2016	1.0	0.3	1.5	0.9	0.2	0.2	-0.6	0.7

Form 1.1c - LADWP
Electricity Sales by Sector (GWh)
Low Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighting	Total Consumption
1980	5,357	6,894	3,914	326	113	1,113	343	18,059
1981	5,587	6,979	3,869	354	137	1,083	350	18,359
1982	5,529	7,032	3,855	355	125	1,023	346	18,265
1983	5,794	7,383	3,651	397	112	1,119	343	18,799
1984	6,157	7,886	3,803	379	156	1,146	328	19,856
1985	6,092	7,960	3,779	379	145	1,172	309	19,835
1986	6,033	8,475	3,863	332	137	1,257	303	20,399
1987	6,222	8,839	3,956	295	157	1,299	297	21,065
1988	6,482	9,132	3,735	292	202	1,282	297	21,423
1989	6,601	9,243	3,435	255	180	1,357	292	21,363
1990	6,835	10,008	3,426	224	156	1,306	290	22,244
1991	6,620	9,739	3,128	232	133	1,273	292	21,417
1992	7,000	10,122	3,050	205	155	1,323	290	22,145
1993	6,726	10,018	2,757	199	130	1,380	289	21,498
1994	6,723	9,133	2,434	220	160	1,349	289	20,308
1995	6,788	9,552	2,454	321	140	1,394	290	20,939
1996	6,917	9,484	2,546	332	175	1,481	292	21,228
1997	7,106	9,751	2,412	313	179	1,549	296	21,605
1998	7,183	9,573	2,405	302	173	1,480	296	21,412
1999	7,140	9,640	2,345	263	223	1,540	284	21,434
2000	7,519	9,829	2,456	252	181	1,625	284	22,146
2001	7,339	9,108	2,596	278	181	1,603	298	21,404
2002	7,370	9,875	2,638	242	163	1,716	287	22,290
2003	7,818	10,124	2,704	234	162	1,697	305	23,044
2004	7,951	10,620	2,582	286	367	1,504	311	23,622
2006	8,131	10,848	2,708	285	370	1,512	303	24,156
2007	8,192	10,787	2,742	287	371	1,516	302	24,196
2008	8,262	10,738	2,775	290	372	1,520	301	24,258
2009	8,328	10,696	2,789	294	373	1,524	300	24,303
2010	8,392	10,641	2,820	299	374	1,527	298	24,351
2011	8,448	10,583	2,845	304	374	1,528	297	24,380
2012	8,505	10,526	2,877	309	375	1,529	296	24,417
2013	8,560	10,466	2,906	313	375	1,530	295	24,445
2014	8,615	10,406	2,919	318	375	1,531	293	24,457
2015	8,680	10,342	2,917	319	376	1,532	292	24,457
2016	8,743	10,277	2,915	321	376	1,532	291	24,455
Annual Growth Rates (%)								
1980-1990	2.5	3.8	-1.3	-3.7	3.2	1.6	-1.7	2.1
1990-2000	1.0	-0.2	-3.3	1.2	1.5	2.2	-0.2	0.0
2000-2003	1.3	1.0	3.3	-2.4	-3.7	1.4	2.4	1.3
2003-2008	1.1	1.2	0.5	4.4	18.1	-2.2	-0.3	1.0
2008-2016	0.7	-0.5	0.6	1.2	0.2	0.1	-0.4	0.1
2003-2016	0.9	0.1	0.6	2.5	6.7	-0.8	-0.4	0.5

Form 1.2 - LADWP
Net Energy for Load (GWh)
Base Case

Year	Total Consumption	Net Losses	Gross Generation	Private Supply	Net Energy for Load
1980	18,059	2,438	20,497	0	20,497
1981	18,359	2,479	20,838	0	20,838
1982	18,265	2,466	20,731	0	20,731
1983	19,029	2,538	21,567	230	21,337
1984	20,195	2,681	22,876	339	22,536
1985	20,152	2,678	22,830	317	22,513
1986	20,822	2,754	23,576	423	23,153
1987	21,552	2,844	24,396	488	23,908
1988	22,143	2,892	25,035	720	24,315
1989	22,276	2,884	25,160	913	24,247
1990	23,263	3,003	26,266	1,018	25,247
1991	22,595	2,891	25,487	1,178	24,308
1992	23,253	2,990	26,242	1,107	25,135
1993	22,635	2,902	25,538	1,137	24,400
1994	21,805	2,742	24,547	1,497	23,050
1995	22,526	2,827	25,352	1,587	23,765
1996	22,715	2,866	25,581	1,488	24,093
1997	22,980	2,917	25,897	1,375	24,522
1998	22,719	2,891	25,610	1,308	24,302
1999	22,751	2,894	25,645	1,317	24,328
2000	23,296	2,990	26,286	1,150	25,136
2001	22,489	2,890	25,378	1,085	24,293
2002	23,626	3,009	26,635	1,335	25,300
2003	24,285	3,111	27,396	1,241	26,155
2004	24,864	3,189	28,053	1,241	26,811
2006	25,578	3,285	28,863	1,241	27,622
2007	25,671	3,298	28,969	1,241	27,727
2008	25,778	3,312	29,091	1,241	27,849
2009	25,869	3,325	29,194	1,241	27,952
2010	25,962	3,337	29,299	1,241	28,057
2011	26,033	3,347	29,380	1,241	28,139
2012	26,111	3,357	29,468	1,241	28,227
2013	26,178	3,366	29,545	1,241	28,303
2014	26,230	3,373	29,603	1,241	28,362
2015	26,260	3,377	29,637	1,241	28,396
2016	26,289	3,381	29,671	1,241	28,429

Annual Growth Rates (%)

1980-1990	2.6	2.1	2.5	#DIV/0!	2.1
1990-2000	0.0	0.0	0.0	1.2	0.0
2000-2004	1.6	1.6	1.6	1.9	1.6
2004-2008	0.9	1.0	0.9	0.0	1.0
2008-2016	0.2	0.3	0.2	0.0	0.3
2004-2016	0.5	0.5	0.5	0.0	0.5

Form 1.3 -LADWP
End User Peak Demand by Sector (MW)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	Other	Total Consumption
1980	1,276	1,465	658	76	15	162	3,653
1981	1,318	1,623	699	82	20	190	3,933
1982	1,320	1,713	683	94	22	192	4,024
1983	1,296	1,786	653	93	18	191	4,037
1984	1,497	1,980	676	89	25	193	4,460
1985	1,454	1,836	712	84	21	197	4,304
1986	1,431	1,847	736	77	20	217	4,329
1987	1,383	2,051	731	78	26	242	4,512
1988	1,598	2,030	662	73	31	226	4,619
1989	1,407	2,000	633	66	27	236	4,369
1990	1,532	2,369	689	62	26	243	4,920
1991	1,517	2,279	654	63	21	237	4,771
1992	1,558	2,383	695	53	23	246	4,957
1993	1,446	2,078	541	50	19	244	4,378
1994	1,477	2,248	635	57	22	277	4,716
1995	1,566	2,148	588	75	19	269	4,665
1996	1,448	2,309	664	85	26	282	4,814
1997	1,699	2,537	617	78	26	290	5,248
1998	1,559	2,660	623	90	31	295	5,259
1999	1,526	2,505	612	81	41	302	5,067
2000	1,541	2,398	644	68	28	307	4,986
2001	1,311	2,228	580	74	29	279	4,501
2002	1,581	2,273	590	64	26	308	4,843
2003	1,572	2,430	649	61	24	309	5,045
2004	1,698	2,383	604	54	26	287	5,052
2005	1,818	2,570	641	57	27	261	5,374
2006	1,836	2,577	648	56	27	262	5,405
2007	1,850	2,570	655	57	27	263	5,421
2008	1,865	2,566	662	58	27	263	5,441
2009	1,880	2,564	666	59	27	264	5,459
2010	1,894	2,559	672	61	27	264	5,476
2011	1,905	2,553	678	62	27	264	5,489
2012	1,918	2,547	684	63	27	265	5,504
2013	1,930	2,540	690	65	27	265	5,517
2014	1,943	2,533	693	66	27	265	5,527
2015	1,956	2,525	693	66	27	265	5,532
2016	1,969	2,517	693	67	27	265	5,539
Annual Growth Rates (%)							
1980-1990	1.8	4.9	0.5	-2.1	5.3	4.1	3.0
1990-2000	0.1	0.1	-0.7	1.0	0.9	2.4	0.1
2000-2004	2.5	-0.2	-1.6	-5.6	-2.5	-1.7	0.3
2004-2008	2.4	1.9	2.3	1.8	1.2	-2.1	1.9
2008-2016	0.7	-0.2	0.6	1.7	0.2	0.1	0.2
2004-2016	1.2	0.5	1.2	1.7	0.5	-0.7	0.8

Form 1.4a - LADWP
Peak Demand (MW)
Base Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	3,653	409	4,062	0	4,062	57.6
1981	3,933	440	4,373	0	4,373	54.4
1982	4,024	451	4,475	0	4,475	52.9
1983	4,037	448	4,485	39	4,446	54.8
1984	4,460	493	4,953	57	4,896	52.5
1985	4,304	476	4,780	53	4,727	54.4
1986	4,329	477	4,806	71	4,735	55.8
1987	4,512	496	5,008	82	4,926	55.4
1988	4,619	504	5,123	121	5,002	55.5
1989	4,369	472	4,841	153	4,688	59.0
1990	4,920	532	5,452	171	5,281	54.6
1991	4,771	512	5,283	198	5,085	54.6
1992	4,957	534	5,491	186	5,305	54.1
1993	4,378	469	4,847	191	4,656	59.8
1994	4,716	500	5,216	251	4,965	53.0
1995	4,665	493	5,158	266	4,891	55.5
1996	4,814	511	5,325	250	5,075	54.2
1997	5,248	562	5,810	231	5,579	50.2
1998	5,259	564	5,823	220	5,604	49.5
1999	5,067	543	5,610	221	5,389	51.5
2000	4,986	537	5,523	193	5,330	53.8
2001	4,501	484	4,985	182	4,803	57.7
2002	4,843	517	5,360	224	5,136	56.2
2003	5,045	542	5,587	208	5,378	55.5
2004	5,052	543	5,595	208	5,386	56.8
2006	5,405	582	5,987	208	5,779	54.6
2007	5,421	584	6,005	208	5,797	54.6
2008	5,441	586	6,027	208	5,819	54.6
2009	5,459	588	6,047	208	5,839	54.6
2010	5,476	590	6,066	208	5,858	54.7
2011	5,489	591	6,081	208	5,872	54.7
2012	5,504	593	6,097	208	5,888	54.7
2013	5,517	595	6,111	208	5,903	54.7
2014	5,527	596	6,123	208	5,914	54.7
2015	5,532	596	6,129	208	5,920	54.8
2016	5,539	597	6,136	208	5,927	54.8
Annual Growth Rates (%)						
1990-2000	0.1	0.1	0.1	1.2	0.1	-0.1
2000-2001	-9.7	-9.9	-9.7	-5.7	-9.9	7.3
2000-2004	0.3	0.3	0.3	1.9	0.3	1.4
2004-2008	1.9	1.9	1.9	0.0	1.9	-1.0
2008-2016	0.2	0.2	0.2	0.0	0.2	0.0
2004-2016	0.8	0.8	0.8	0.0	0.8	-0.3

Peak Demand (MW)
High Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	3,653	409	4,062	0	4,062	57.6
1981	3,933	440	4,373	0	4,373	54.4
1982	4,024	451	4,475	0	4,475	52.9
1983	4,037	448	4,485	39	4,446	54.8
1984	4,460	493	4,953	57	4,896	52.5
1985	4,304	476	4,780	53	4,727	54.4
1986	4,329	477	4,806	71	4,735	55.8
1987	4,512	496	5,008	82	4,926	55.4
1988	4,619	504	5,123	121	5,002	55.5
1989	4,369	472	4,841	153	4,688	59.0
1990	4,920	532	5,452	171	5,281	54.6
1991	4,771	512	5,283	198	5,085	54.6
1992	4,957	534	5,491	186	5,305	54.1
1993	4,378	469	4,847	191	4,656	59.8
1994	4,716	500	5,216	251	4,965	53.0
1995	4,665	493	5,158	266	4,891	55.5
1996	4,814	511	5,325	250	5,075	54.2
1997	5,248	562	5,810	231	5,579	50.2
1998	5,259	564	5,823	220	5,604	49.5
1999	5,067	543	5,610	221	5,389	51.5
2000	4,986	537	5,523	193	5,330	53.8
2001	4,501	484	4,985	182	4,803	57.7
2002	4,843	517	5,360	224	5,136	56.2
2003	5,045	542	5,587	208	5,378	55.5
2004	5,081	546	5,627	208	5,419	56.5
2006	5,414	583	5,997	208	5,788	54.6
2007	5,436	585	6,021	208	5,813	54.6
2008	5,464	589	6,052	208	5,844	54.6
2009	5,493	592	6,084	208	5,876	54.6
2010	5,519	595	6,114	208	5,905	54.7
2011	5,541	597	6,138	208	5,930	54.7
2012	5,566	600	6,165	208	5,957	54.7
2013	5,590	603	6,193	208	5,985	54.7
2014	5,616	606	6,222	208	6,013	54.7
2015	5,636	608	6,244	208	6,036	54.8
2016	5,657	610	6,267	208	6,059	54.8
Annual Growth Rates (%)						
1990-2000	0.1	0.1	0.1	1.2	0.1	-0.1
2000-2001	-9.7	-9.9	-9.7	-5.7	-9.9	7.3
2000-2004	0.5	0.4	0.5	1.9	0.4	1.2
2004-2008	1.8	1.9	1.8	0.0	1.9	-0.8
2008-2016	0.4	0.5	0.4	0.0	0.5	0.0
2004-2016	0.9	0.9	0.9	0.0	0.9	-0.3

Form 1.4c - LADWP
Peak Demand (MW)
Low Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	3,653	409	4,062	0	4,062	57.6
1981	3,933	440	4,373	0	4,373	54.4
1982	4,024	451	4,475	0	4,475	52.9
1983	4,037	448	4,485	39	4,446	54.8
1984	4,460	493	4,953	57	4,896	52.5
1985	4,304	476	4,780	53	4,727	54.4
1986	4,329	477	4,806	71	4,735	55.8
1987	4,512	496	5,008	82	4,926	55.4
1988	4,619	504	5,123	121	5,002	55.5
1989	4,369	472	4,841	153	4,688	59.0
1990	4,920	532	5,452	171	5,281	54.6
1991	4,771	512	5,283	198	5,085	54.6
1992	4,957	534	5,491	186	5,305	54.1
1993	4,378	469	4,847	191	4,656	59.8
1994	4,716	500	5,216	251	4,965	53.0
1995	4,665	493	5,158	266	4,891	55.5
1996	4,814	511	5,325	250	5,075	54.2
1997	5,248	562	5,810	231	5,579	50.2
1998	5,259	564	5,823	220	5,604	49.5
1999	5,067	543	5,610	221	5,389	51.5
2000	4,986	537	5,523	193	5,330	53.8
2001	4,501	484	4,985	182	4,803	57.7
2002	4,843	517	5,360	224	5,136	56.2
2003	5,045	542	5,587	208	5,378	55.5
2004	5,081	546	5,627	208	5,419	56.1
2006	5,365	577	5,942	208	5,734	53.9
2007	5,369	578	5,947	208	5,738	54.1
2008	5,378	579	5,957	208	5,748	54.2
2009	5,385	580	5,965	208	5,757	54.4
2010	5,392	581	5,973	208	5,765	54.5
2011	5,396	581	5,977	208	5,768	54.7
2012	5,401	582	5,983	208	5,774	54.8
2013	5,405	582	5,987	208	5,779	55.0
2014	5,406	582	5,988	208	5,780	55.1
2015	5,405	582	5,987	208	5,778	55.3
2016	5,404	582	5,986	208	5,777	55.5
Annual Growth Rates (%)						
1990-2000	0.1	0.1	0.1	1.2	0.1	-0.1
2000-2001	-9.7	-9.9	-9.7	-5.7	-9.9	7.3
2000-2004	0.5	0.4	0.5	1.9	0.4	1.0
2004-2008	1.4	1.5	1.4	0.0	1.5	-0.9
2008-2016	0.1	0.1	0.1	0.0	0.1	0.3
2004-2016	0.5	0.5	0.5	0.0	0.5	-0.1

Form 1.5 - LADWP
Noncoincident Peak Demand Temperature Scenarios

Year	1-in-2 Temperatures	1-in-5 Temperatures	1-in-10 Temperatures	1-in-20 Temperatures	1-in-5 Multiplier	1-in-10 Multiplier	1-in-20 Multiplier
2006	5,405	5,712	5,769	5,781	1.057	1.067	1.069
2007	5,421	5,729	5,786	5,798	1.057	1.067	1.069
2008	5,441	5,749	5,807	5,819	1.057	1.067	1.069
2009	5,459	5,768	5,826	5,838	1.057	1.067	1.069
2010	5,476	5,787	5,845	5,857	1.057	1.067	1.069
2011	5,489	5,800	5,858	5,871	1.057	1.067	1.069
2012	5,504	5,816	5,874	5,886	1.057	1.067	1.069
2013	5,517	5,829	5,888	5,900	1.057	1.067	1.069
2014	5,527	5,840	5,899	5,911	1.057	1.067	1.069
2015	5,532	5,846	5,904	5,917	1.057	1.067	1.069
2016	5,539	5,853	5,911	5,923	1.057	1.067	1.069

Form 1.7a - LADWP
Private Supply by Sector (GWh)

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighti ng	Total Consumption
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	230	0	0	0	0	230
1984	0	0	339	0	0	0	0	339
1985	0	0	317	0	0	0	0	317
1986	0	0	382	0	0	41	0	423
1987	0	11	381	0	0	96	0	488
1988	0	19	569	0	0	132	0	720
1989	0	25	740	0	0	147	0	913
1990	0	34	811	0	0	173	0	1,018
1991	0	52	947	0	0	179	0	1,178
1992	0	61	883	0	0	163	0	1,107
1993	0	63	906	0	0	168	0	1,137
1994	0	272	1,039	0	0	186	0	1,497
1995	0	311	1,063	0	0	214	0	1,587
1996	0	259	1,140	0	0	88	0	1,488
1997	0	284	997	0	0	94	0	1,375
1998	0	284	994	0	0	29	0	1,308
1999	0	282	1,026	0	0	9	0	1,317
2000	0	276	868	0	0	5	0	1,150
2001	0	226	860	0	0	0	0	1,085
2002	0	240	1,048	0	0	47	0	1,335
2003	0	256	986	0	0	0	0	1,241
2006	0	256	986	0	0	0	0	1,241
2007	0	256	986	0	0	0	0	1,241
2008	0	256	986	0	0	0	0	1,241
2009	0	256	986	0	0	0	0	1,241
2010	0	256	986	0	0	0	0	1,241
2011	0	256	986	0	0	0	0	1,241
2012	0	256	986	0	0	0	0	1,241
2013	0	256	986	0	0	0	0	1,241
2014	0	256	986	0	0	0	0	1,241
2015	0	256	986	0	0	0	0	1,241
2016	0	256	986	0	0	0	0	1,241

Annual Growth Rates (%)

1980-1990								
1990-2000		23.2	0.7					1.2
2000-2003		-2.6	4.3					2.6
2003-2008		0.0	0.0					0.0
2008-2016		0.0	0.0					0.0
2003-2016		0.0	0.0					0.0

Form 2.2 - LADWP
Planning Area Economic and Demographic Assumptions

Year	Population	Households - Base & Low	Households - High	Per Capita Income - Low (2003$)	Per Capita Income - Base (2003$)	Per Capita Income - HIgh (2003$)	Industrial Value Added (Millions 2003$)	Commercial Floorspace (MM Sqft.)
1980	2,911,071	1,141,348	1,141,348	24,687	24,687	24,687	9,253	512
1981	2,906,382	1,144,334	1,144,334	24,962	24,962	24,962	9,511	526
1982	2,946,765	1,143,395	1,143,395	24,926	24,926	24,926	9,639	539
1983	3,008,025	1,147,822	1,147,822	25,544	25,544	25,544	9,812	554
1984	3,055,023	1,157,502	1,157,502	27,088	27,088	27,088	10,622	568
1985	3,144,360	1,176,354	1,176,354	28,154	28,154	28,154	10,847	578
1986	3,233,979	1,194,701	1,194,701	28,969	28,969	28,969	10,683	592
1987	3,290,068	1,207,674	1,207,674	29,752	29,752	29,752	12,171	604
1988	3,350,446	1,217,310	1,217,310	30,422	30,422	30,422	12,662	615
1989	3,410,676	1,223,827	1,223,827	30,826	30,826	30,826	12,412	626
1990	3,426,296	1,223,775	1,223,775	31,744	31,744	31,744	12,072	637
1991	3,463,569	1,236,693	1,236,693	30,463	30,463	30,463	11,274	648
1992	3,511,438	1,249,823	1,249,823	30,531	30,531	30,531	10,496	654
1993	3,521,592	1,255,453	1,255,453	29,537	29,537	29,537	10,459	657
1994	3,515,761	1,263,828	1,263,828	29,249	29,249	29,249	10,132	658
1995	3,483,673	1,261,648	1,261,648	29,466	29,466	29,466	10,533	658
1996	3,483,861	1,263,289	1,263,289	30,090	30,090	30,090	10,896	658
1997	3,513,029	1,270,599	1,270,599	30,683	30,683	30,683	11,562	659
1998	3,542,204	1,273,970	1,273,970	33,075	33,075	33,075	12,544	661
1999	3,591,746	1,279,983	1,279,983	33,722	33,722	33,722	13,626	663
2000	3,652,839	1,285,461	1,285,461	34,585	34,812	34,812	14,216	669
2001	3,703,458	1,292,013	1,292,013	35,235	35,776	35,776	12,413	674
2002	3,759,490	1,295,317	1,295,317	35,403	36,135	36,135	11,223	679
2003	3,809,972	1,299,743	1,299,743	35,485	36,542	36,542	11,288	685
2004	3,833,441	1,306,087	1,306,087	36,357	37,553	37,553	11,656	690
2005	3,843,425	1,307,814	1,307,815	36,777	38,754	38,754	12,019	695
2006	3,853,299	1,309,497	1,309,498	37,030	39,544	39,544	12,253	699
2007	3,863,057	1,311,133	1,311,134	37,538	40,242	40,242	12,522	704
2008	3,872,701	1,312,724	1,312,726	38,135	40,975	40,975	12,840	709
2009	3,882,228	1,314,271	1,314,274	38,671	41,635	41,635	13,130	713
2010	3,891,648	1,315,774	1,315,777	39,164	42,226	42,226	13,421	718
2011	3,893,986	1,316,565	1,316,568	39,652	42,796	42,796	13,697	722
2012	3,896,265	1,317,334	1,317,338	40,143	43,369	43,369	13,987	727
2013	3,898,476	1,318,081	1,318,085	40,591	43,892	43,892	14,284	731
2014	3,900,628	1,318,808	1,318,813	41,014	44,406	44,406	14,575	736
2015	3,902,718	1,319,513	1,319,518	41,570	44,927	44,926	14,798	740
2016	3,904,746	1,320,199	1,320,204	42,090	45,450	45,450	15,006	744
Annual Growth Rates (%)								
1990-2000	0.6	0.5	0.5	0.9	0.9	0.9	1.6	0.5
2000-2001	1.4	0.5	0.5	1.9	2.8	2.8	-12.7	0.8
2000-2003	1.4	0.4	0.4	0.9	1.6	1.6	-7.4	0.8
2003-2008	0.3	0.2	0.2	1.5	2.3	2.3	2.6	0.7
2008-2016	0.1	0.1	0.1	1.2	1.3	1.3	2.0	0.6
2003-2016	0.2	0.1	0.1	1.3	1.7	1.7	2.2	0.6

Form 2.3a - LADWP
Electricity Rate Forecast (2003 cents/kwh)

Year	GDP Implicit Price Deflator	Residential	Small Commercial	Medium Commercial	Industrial
1990	75.49	11.78	11.35	11.35	9.24
1991	78.13	11.49	10.46	10.46	9.07
1992	79.92	11.50	10.76	10.76	9.48
1993	81.77	12.05	10.94	10.94	10.14
1994	83.51	11.94	11.66	11.66	9.64
1995	85.22	11.54	10.65	10.65	9.38
1996	86.83	11.32	10.44	10.44	9.24
1997	88.28	11.82	10.55	10.55	8.42
1998	89.26	11.69	12.15	10.74	8.33
1999	90.54	11.52	11.97	10.59	8.21
2000	92.52	11.28	11.72	10.36	8.04
2001	94.74	11.01	11.44	10.12	7.85
2002	96.31	10.84	11.26	9.94	7.71
2003	98.07	10.64	11.06	9.74	7.55
2004	100.00	10.44	9.60	9.60	7.41
2005	101.51	10.29	8.95	8.95	6.74
2006	103.64	10.23	8.82	8.82	6.62
2007	105.58	10.22	8.78	8.78	6.58
2008	107.36	10.17	8.68	8.68	6.47
2009	109.26	10.11	8.54	8.54	6.33
2010	111.24	10.07	8.44	8.44	6.24
2011	113.25	10.03	8.35	8.35	6.15
2012	115.23	10.00	8.26	8.26	6.07
2013	117.23	9.96	8.18	8.18	5.98
2014	119.25	9.92	8.09	8.09	5.90
2015	121.31	9.89	8.01	8.01	5.82
2016	123.42	9.85	7.93	7.93	5.74

Annual Growth Rates (%)					
1990-2000	2.1	-0.4	0.3	-0.9	-1.4
2000-2001	2.4	-2.3	-2.3	-2.3	-2.3
2000-2003	2.0	-1.9	-1.9	-2.1	-2.0
2003-2008	1.8	-0.9	-4.7	-2.3	-3.0
2008-2016	1.8	-0.4	-1.1	-1.1	-1.5
2003-2016	1.8	-0.6	-2.5	-1.6	-2.1

CHAPTER 7

BURBANK, GLENDALE AND PASADENA (BGP) PLANNING AREA

The Burbank, Glendale and Pasadena planning area consists of the municipal utilities serving the cities of Burbank, Glendale and Pasadena. Staff has traditionally forecast these cities together. In the future, forecasts for the individual cities will be included in their respective control areas.

This chapter is limited to discussion at the total planning area level. More detail is provided in the tables following this chapter.

Forecast Results

Table 7-1 presents a comparison of the electricity consumption and peak demand scenarios for selected years.

Table 7-1: BGP Planning Area Forecast Comparison

Consumption (GWH)						
	Jun-05	Low	Base	High	Percent Difference Base/Jun-05	Percent Difference High/Low
1990	2,955	2,963	2,963	2,963	0.27%	0.00%
2000	3,331	3,339	3,339	3,339	0.24%	0.00%
2004	3,308	3,353	3,353	3,353	1.34%	0.00%
2008	3,257	3,313	3,328	3,398	2.18%	2.57%
2016	3,146	3,183	3,204	3,428	1.84%	7.67%
Annual Average Growth Rates						
1990-2000	1.20%	1.20%	1.20%	1.20%		
2000-2004	-0.17%	0.11%	0.11%	0.11%		
2004-2008	-0.39%	-0.30%	-0.18%	0.34%		
2004-2016	-0.42%	-0.43%	-0.38%	0.18%		
Peak (MW)						
	Jun-05	Low	Base	High	Percent Difference Base/Draft	Percent Difference High/Low
1990	812	813	813	813	0.12%	0.00%
2000	825	826	826	826	0.14%	0.00%
2004	873	883	883	883	1.22%	0.00%
2008	860	877	881	900	2.52%	2.64%
2016	832	846	852	912	2.31%	7.88%
Annual Average Growth Rates						
1990-2000	0.15%	0.16%	0.16%	0.16%		
2000-2004	1.41%	1.68%	1.68%	1.68%		
2004-2008	-0.38%	-0.17%	-0.06%	0.48%		
2004-2016	-0.39%	-0.36%	-0.30%	0.27%		
Historic values are shaded						

Figures 7-1 and 7-2 present graphical representations of the revised forecast ranges compared to the June 2005 baseline forecast. Both the revised electricity consumption and peak forecasts are slightly higher than the June forecasts due to inclusion of 2004 consumption data and revisions to economic projections.

Figure 7-1: BGP Planning Area Electricity Forecast

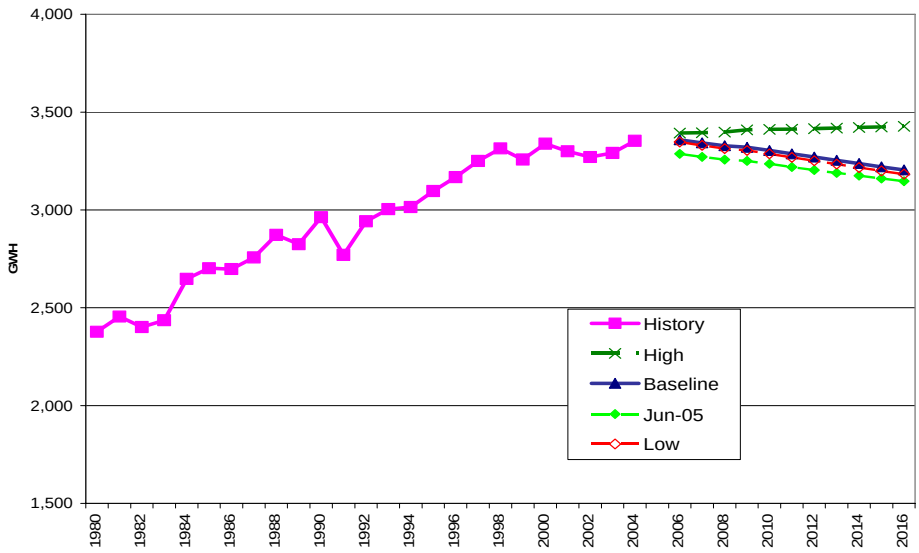
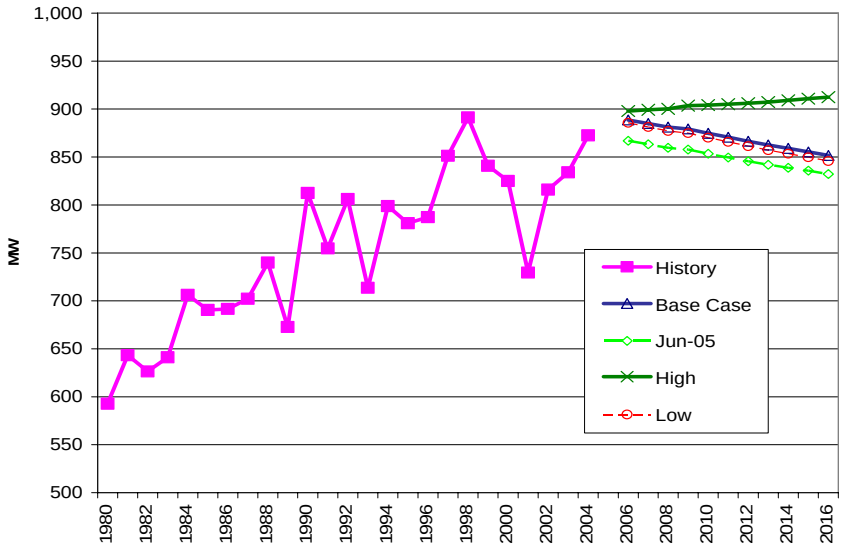


Figure 7-2: BGP Planning Area Peak



Figures 7-3 provides comparison of BGP planning area per capita electricity consumption forecasts. Per capita consumption is projected to decline slightly in all but the high case.

Figure 7-3: BGP Planning Area per Capita Electricity Consumption

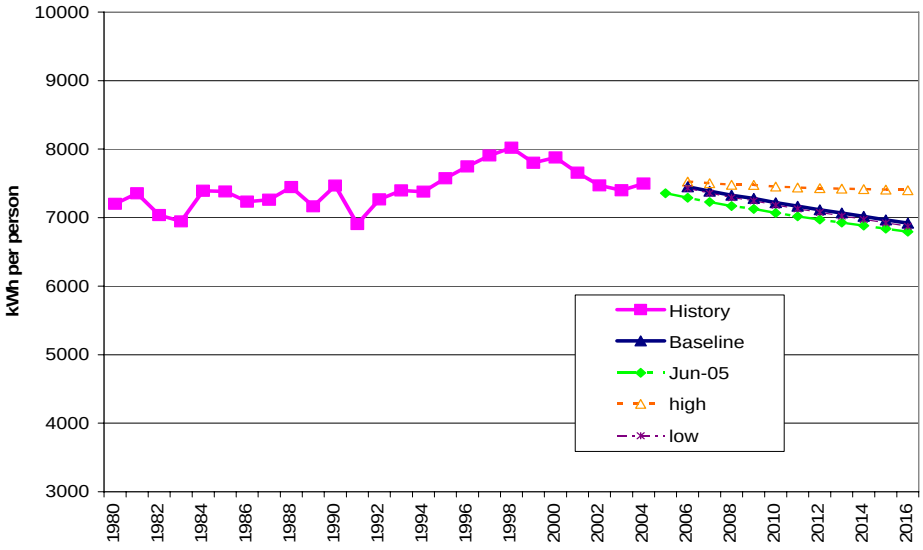


Figure 7-4 provides a comparison of per capita peak demand for the revised forecast scenarios.

Figure 7-4: BGP Planning Area per Capita Peak Demand

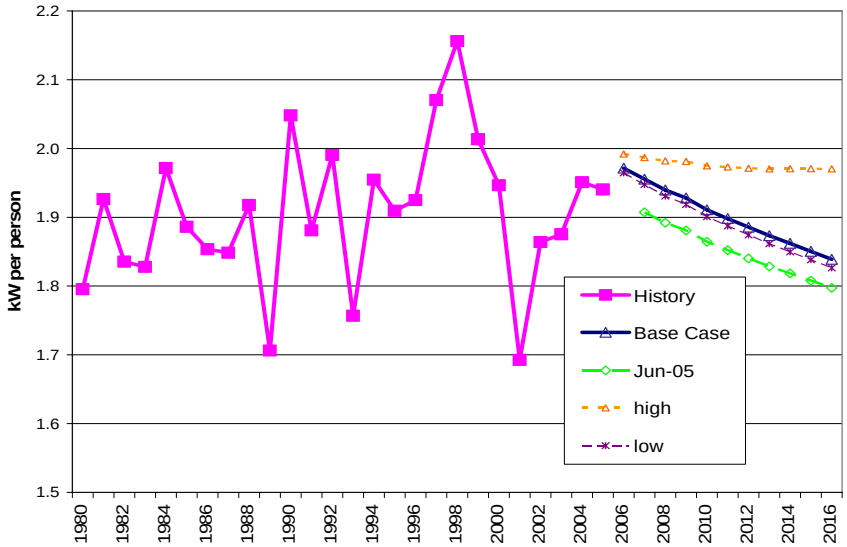
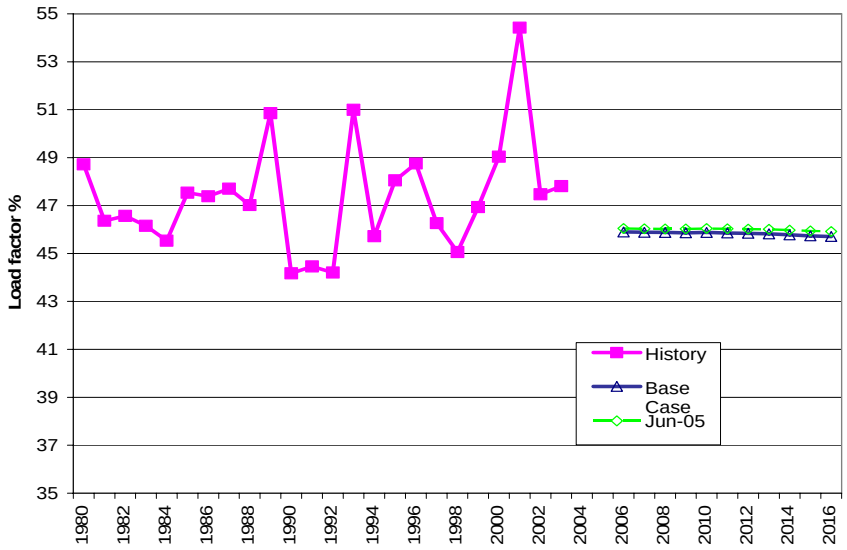


Figure 7-5 provides a comparison of the respective load factors. The load factor is a measure of the relative increase in peak demand with respect to annual electricity consumption. Lower load factors indicate more of a needle peak and higher load factors indicate a more stable load

Figure 7-5: BGP Planning Area Load Factor



Form 1.1 - BGP
Electricity Consumption by Sector (GWh)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighti ng	Total Consumption
1980	616	1,051	598	14	12	46	40	2,378
1981	641	1,114	592	14	9	46	39	2,455
1982	647	1,117	528	15	9	48	37	2,401
1983	681	1,108	510	26	21	54	35	2,436
1984	730	1,207	565	25	32	57	32	2,648
1985	715	1,272	562	28	32	62	30	2,702
1986	714	1,272	559	30	30	64	29	2,698
1987	735	1,289	574	31	34	66	29	2,757
1988	783	1,351	574	36	36	61	30	2,872
1989	785	1,335	539	39	37	59	31	2,824
1990	858	1,429	504	46	33	62	31	2,963
1991	797	1,415	398	40	29	60	31	2,770
1992	842	1,560	376	43	28	63	30	2,942
1993	825	1,712	312	43	25	56	31	3,004
1994	839	1,757	269	42	26	52	31	3,015
1995	862	1,817	250	50	28	61	31	3,097
1996	875	1,874	250	53	25	63	28	3,168
1997	889	1,933	249	49	22	75	34	3,251
1998	896	1,989	247	54	21	73	34	3,315
1999	876	1,968	230	56	21	74	33	3,257
2000	903	2,038	210	57	21	76	33	3,339
2001	907	2,051	166	55	10	79	31	3,299
2002	879	2,035	176	49	16	84	31	3,271
2003	891	2,069	153	46	16	82	34	3,291
2004	914	2,089	153	41	7	105	44	3,353
2006	946	2,086	157	41	7	106	15	3,358
2007	953	2,062	157	42	7	107	15	3,343
2008	961	2,037	159	43	7	107	15	3,328
2009	969	2,019	159	44	7	107	15	3,320
2010	976	1,994	160	45	7	108	15	3,304
2011	982	1,968	161	46	7	108	15	3,287
2012	988	1,943	162	47	7	108	15	3,270
2013	993	1,919	163	49	7	108	14	3,254
2014	999	1,895	164	50	7	109	14	3,238
2015	1,005	1,872	163	50	7	109	14	3,221
2016	1,011	1,850	163	50	7	109	14	3,204
Annual Growth Rates (%)								
1980-1990	3.4	3.1	-1.7	12.4	10.6	3.0	-2.5	2.2
1990-2000	0.5	3.6	-8.4	2.2	-4.5	2.1	0.6	1.2
2000-2004	0.3	0.6	-7.7	-8.1	-24.0	8.6	7.9	0.1
2004-2008	1.3	-0.6	0.9	1.2	0.4	0.4	-24.1	-0.2
2008-2016	0.6	-1.2	0.3	2.0	0.2	0.2	-0.4	-0.5
2004-2016	0.8	-1.0	0.5	1.7	0.3	0.3	-9.0	-0.4

California Energy Demand 2006-2016 Staff Forecast
Form 1.1b - BGP
Electricity Consumption by Sector (GWh)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighting	Total Consumption
1980	616	1,051	598	14	12	46	40	2,378
1981	641	1,114	592	14	9	46	39	2,455
1982	647	1,117	528	15	9	48	37	2,401
1983	681	1,108	510	26	21	54	35	2,436
1984	730	1,207	565	25	32	57	32	2,648
1985	715	1,272	562	28	32	62	30	2,702
1986	714	1,272	559	30	30	64	29	2,698
1987	735	1,289	574	31	34	66	29	2,757
1988	783	1,351	574	36	36	61	30	2,872
1989	785	1,335	539	39	37	59	31	2,824
1990	858	1,429	504	46	33	62	31	2,963
1991	797	1,415	398	40	29	60	31	2,770
1992	842	1,560	376	43	28	63	30	2,942
1993	825	1,712	312	43	25	56	31	3,004
1994	839	1,757	269	42	26	52	31	3,015
1995	862	1,817	250	50	28	61	31	3,097
1996	875	1,874	250	53	25	63	28	3,168
1997	889	1,933	249	49	22	75	34	3,251
1998	896	1,989	247	54	21	73	34	3,315
1999	876	1,968	230	56	21	74	33	3,257
2000	903	2,038	210	57	21	76	33	3,339
2001	907	2,051	166	55	10	79	31	3,299
2002	879	2,035	176	49	16	84	31	3,271
2003	891	2,069	153	46	16	82	34	3,291
2004	914	2,089	153	41	7	105	44	3,353
2006	946	2,120	157	41	7	106	15	3,393
2007	953	2,112	159	42	7	107	15	3,395
2008	961	2,105	161	43	7	107	15	3,398
2009	969	2,105	163	44	7	107	15	3,409
2010	976	2,097	165	45	7	108	15	3,412
2011	982	2,089	166	46	7	108	15	3,413
2012	988	2,082	169	47	7	108	15	3,415
2013	993	2,075	171	49	7	108	14	3,418
2014	999	2,069	173	50	7	109	14	3,422
2015	1,005	2,064	175	50	7	109	14	3,424
2016	1,011	2,060	176	50	7	109	14	3,428
Annual Growth Rates (%)								
1980-1990	3.4	3.1	-1.7	12.4	10.6	3.0	-2.5	2.2
1990-2000	0.5	3.6	-8.4	2.2	-4.5	2.1	0.6	1.2
2000-2004	0.3	0.6	-7.7	-8.1	-24.0	8.6	7.9	0.1
2004-2008	1.3	0.2	1.3	1.2	0.4	0.4	-24.1	0.3
2008-2016	0.6	-0.3	1.1	2.0	0.2	0.2	-0.4	0.1
2004-2016	0.8	-0.1	1.2	1.7	0.3	0.3	-9.0	0.2

Form 1.1b - BGP
Electricity Consumption by Sector (GWh)
Low Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighti ng	Total Consumption
1980	616	1,051	598	14	12	46	40	2,378
1981	641	1,114	592	14	9	46	39	2,455
1982	647	1,117	528	15	9	48	37	2,401
1983	681	1,108	510	26	21	54	35	2,436
1984	730	1,207	565	25	32	57	32	2,648
1985	715	1,272	562	28	32	62	30	2,702
1986	714	1,272	559	30	30	64	29	2,698
1987	735	1,289	574	31	34	66	29	2,757
1988	783	1,351	574	36	36	61	22	2,864
1989	785	1,335	539	39	37	59	23	2,816
1990	858	1,429	504	46	33	62	23	2,955
1991	797	1,415	398	40	29	60	23	2,762
1992	842	1,560	376	43	28	63	22	2,934
1993	825	1,712	312	43	25	56	23	2,996
1994	839	1,757	269	42	26	52	23	3,007
1995	862	1,817	250	50	28	61	23	3,089
1996	875	1,874	250	53	25	63	20	3,160
1997	889	1,933	249	49	22	75	26	3,243
1998	896	1,989	247	54	21	73	26	3,307
1999	876	1,968	230	56	21	74	25	3,249
2000	903	2,038	210	57	21	76	25	3,331
2001	907	2,036	165	55	10	78	17	3,268
2002	879	1,976	171	49	16	82	16	3,189
2003	891	2,079	154	46	16	82	15	3,283
2004	904	2,078	156	44	28	83	15	3,308
2006	913	2,042	161	44	28	83	15	3,287
2007	920	2,018	162	44	29	84	15	3,271
2008	927	1,993	164	45	29	84	15	3,257
2009	934	1,976	166	46	29	84	15	3,250
2010	941	1,951	168	47	29	85	15	3,235
2011	946	1,926	170	48	29	85	15	3,219
2012	952	1,902	172	49	29	85	15	3,204
2013	958	1,878	175	50	29	85	14	3,189
2014	963	1,855	177	51	29	85	14	3,175
2015	970	1,832	179	51	29	86	14	3,161
2016	976	1,810	180	52	29	86	14	3,146
Annual Growth Rates (%)								
1980-1990	3.4	3.1	-1.7	12.4	10.6	3.0	-5.4	2.2
1990-2000	0.5	3.6	-8.4	2.2	-4.5	2.1	0.8	1.2
2000-2004	0.0	0.5	-7.1	-6.4	7.9	2.3	-12.0	-0.2
2004-2008	0.6	-1.0	1.3	0.6	0.4	0.4	-0.2	-0.4
2008-2016	0.6	-1.2	1.1	1.7	0.2	0.2	-0.4	-0.4
2004-2016	0.6	-1.1	1.2	1.3	0.3	0.3	-0.3	-0.4

Form 1.2 - BGP
Net Energy for Load (GWH)
Base Case

Year	Total Consumption	Net Losses	Gross Generation	Private Supply	Net Energy for Load
1980	2,378	152	2,530	0	2,530
1981	2,455	157	2,612	0	2,612
1982	2,401	154	2,555	0	2,555
1983	2,436	156	2,592	0	2,592
1984	2,648	169	2,817	0	2,817
1985	2,702	173	2,875	0	2,875
1986	2,698	173	2,871	0	2,871
1987	2,757	176	2,934	0	2,934
1988	2,872	184	3,056	0	3,056
1989	2,824	181	3,005	0	3,005
1990	2,963	190	3,152	0	3,152
1991	2,770	177	2,948	0	2,948
1992	2,942	188	3,130	0	3,130
1993	3,004	192	3,196	0	3,196
1994	3,015	193	3,208	0	3,208
1995	3,097	198	3,295	0	3,295
1996	3,168	203	3,370	0	3,370
1997	3,251	208	3,459	0	3,459
1998	3,315	212	3,527	0	3,527
1999	3,257	208	3,466	0	3,466
2000	3,339	214	3,552	0	3,552
2001	3,299	211	3,510	0	3,510
2002	3,271	209	3,480	0	3,480
2003	3,291	211	3,501	0	3,501
2004	3,353	215	3,567	0	3,567
2006	3,358	215	3,573	0	3,573
2007	3,343	214	3,557	0	3,557
2008	3,328	213	3,541	0	3,541
2009	3,320	212	3,533	0	3,533
2010	3,304	211	3,516	0	3,516
2011	3,287	210	3,497	0	3,497
2012	3,270	209	3,480	0	3,480
2013	3,254	208	3,462	0	3,462
2014	3,238	207	3,445	0	3,445
2015	3,221	206	3,427	0	3,427
2016	3,204	205	3,409	0	3,409

Annual Growth Rates (%)

1980-1990	2.2	2.2	2.2	2.2
1990-2000	1.2	1.2	1.2	1.2
2000-2004	0.1	0.1	0.1	0.1
2004-2008	-0.2	-0.2	-0.2	-0.2
2008-2016	-0.5	-0.5	-0.5	-0.5
2004-2016	-0.4	-0.4	-0.4	-0.4

Form 1.3 -BGP
End User Peak Demand by Sector (MW)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	Other	Total Consumption
1980	169	292	93	3	0	7	564
1981	163	337	101	3	0	8	612
1982	133	342	107	4	0	10	596
1983	146	351	96	6	0	10	610
1984	177	374	105	6	0	10	672
1985	197	349	93	6	1	10	657
1986	209	339	93	6	0	11	658
1987	152	380	116	7	0	13	668
1988	200	384	101	8	0	10	704
1989	162	370	90	8	1	10	640
1990	218	447	88	9	0	10	773
1991	179	452	68	9	0	10	718
1992	193	481	71	9	1	12	767
1993	199	406	55	9	0	9	679
1994	200	486	54	9	1	11	760
1995	240	443	41	10	0	10	743
1996	231	456	41	10	0	10	749
1997	203	535	47	11	0	14	810
1998	174	593	51	13	1	16	848
1999	205	526	42	12	1	14	800
2000	199	522	37	13	1	14	785
2001	215	435	22	10	0	12	694
2002	231	495	26	10	0	14	776
2003	234	512	23	9	0	14	794
2004	218	525	25	9	1	15	792
2005	244	551	26	9	1	18	849
2006	246	545	26	9	1	18	846
2007	248	540	26	10	1	18	842
2008	249	534	26	10	1	18	838
2009	251	530	26	10	1	19	837
2010	252	524	27	10	1	19	832
2011	253	519	27	11	1	19	828
2012	255	513	27	11	1	19	824
2013	256	507	27	11	1	19	821
2014	258	502	27	12	1	19	817
2015	259	497	27	12	1	19	814
2016	261	491	27	12	1	19	810
Annual Growth Rates (%)							
1980-1990	2.6	4.4	-0.5	13.0	12.7	2.7	3.2
1990-2000	-0.9	1.6	-8.4	3.1	2.5	3.7	0.2
2000-2004	2.3	0.1	-9.1	-7.9	-2.6	0.8	0.2
2004-2008	3.4	0.4	1.3	1.8	1.4	6.1	1.4
2008-2016	0.6	-1.0	0.4	2.3	0.1	0.2	-0.4

Form 1.4a - BGP Planning Area
Peak Demand (MW)
Base Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	564	29	593	0	593	48.7
1981	612	31	643	0	643	46.4
1982	596	30	626	0	626	46.6
1983	610	31	641	0	641	46.2
1984	672	34	706	0	706	45.5
1985	657	34	691	0	691	47.5
1986	658	34	692	0	692	47.4
1987	668	34	702	0	702	47.7
1988	704	36	740	0	740	47.2
1989	640	33	673	0	673	51.0
1990	773	39	812	0	812	44.3
1991	718	37	755	0	755	44.6
1992	767	39	806	0	806	44.3
1993	679	35	714	0	714	51.1
1994	760	39	799	0	799	45.8
1995	743	38	781	0	781	48.2
1996	749	38	787	0	787	48.9
1997	810	41	851	0	851	46.4
1998	848	43	891	0	891	45.2
1999	800	41	841	0	841	47.1
2000	785	40	825	0	825	49.2
2001	694	35	729	0	729	54.9
2002	776	40	816	0	816	48.7
2003	794	40	834	0	834	47.9
2004	792	40	832	0	832	48.9
	849					
2006	846	43	889	0	889	45.9
2007	842	43	885	0	885	45.9
2008	838	43	881	0	881	45.9
2009	837	43	879	0	879	45.9
2010	832	42	875	0	875	45.9
2011	828	42	871	0	871	45.9
2012	824	42	866	0	866	45.8
2013	821	42	863	0	863	45.8
2014	817	42	859	0	859	45.8
2015	814	42	855	0	855	45.7
2016	810	41	852	0	852	45.7

Annual Growth Rates (%)

1990-2000	0.2	0.2	0.2	0.2	1.0
2000-2001	-11.6	-11.6	-11.6	-11.6	11.8
2000-2004	0.2	0.2	0.2	0.2	-0.1
2004-2008	1.4	1.4	1.4	1.4	-1.6
2008-2016	-0.4	-0.4	-0.4	-0.4	0.0
2004-2016	0.2	0.2	0.2	0.2	-0.6

Form 1.4b - BGP Planning Area
California Energy Demand 2006-2016 Staff Forecast
Peak Demand (MW)
High Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	564	29	593	0	593	48.7
1981	612	31	643	0	643	46.4
1982	596	30	626	0	626	46.6
1983	610	31	641	0	641	46.2
1984	672	34	706	0	706	45.5
1985	657	34	691	0	691	47.5
1986	658	34	692	0	692	47.4
1987	668	34	702	0	702	47.7
1988	705	36	741	0	741	47.1
1989	641	33	674	0	674	50.9
1990	774	39	813	0	813	44.2
1991	719	37	756	0	756	44.5
1992	768	39	807	0	807	44.3
1993	680	35	715	0	715	51.1
1994	761	39	800	0	800	45.8
1995	744	38	782	0	782	48.1
1996	750	38	788	0	788	48.8
1997	811	41	853	0	853	46.3
1998	849	43	893	0	893	45.1
1999	801	41	842	0	842	47.0
2000	786	40	826	0	826	49.1
2001	699	36	735	0	735	54.5
2002	794	41	835	0	835	47.6
2003	794	40	834	0	834	47.9
2004	840	43	883	0	883	46.1
	853					
2006	854	44	898	0	898	45.9
2007	855	44	899	0	899	45.9
2008	857	44	900	0	900	45.8
2009	860	44	904	0	904	45.8
2010	860	44	904	0	904	45.8
2011	861	44	905	0	905	45.8
2012	862	44	906	0	906	45.8
2013	863	44	907	0	907	45.8
2014	865	44	909	0	909	45.7
2015	867	44	911	0	911	45.7
2016	868	44	912	0	912	45.6

Annual Growth Rates (%)

1990-2000	0.2	0.2	0.2	0.2	1.0
2000-2001	-11.1	-11.1	-11.1	-11.1	11.1
2000-2004	1.7	1.7	1.7	1.7	-1.6
2004-2008	0.5	0.5	0.5	0.5	-0.1
2008-2016	0.2	0.2	0.2	0.2	-0.1
2004-2016	0.3	0.3	0.3	0.3	-0.1

Form 1.4c - BGP Planning Area
Peak Demand (MW)
Low Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	564	29	593	0	593	48.7
1981	612	31	643	0	643	46.4
1982	596	30	626	0	626	46.6
1983	610	31	641	0	641	46.2
1984	672	34	706	0	706	45.5
1985	657	34	691	0	691	47.5
1986	658	34	692	0	692	47.4
1987	668	34	702	0	702	47.7
1988	704	36	740	0	740	47.0
1989	640	33	673	0	673	50.9
1990	773	39	812	0	812	44.2
1991	718	37	755	0	755	44.5
1992	767	39	806	0	806	44.2
1993	679	35	714	0	714	51.0
1994	760	39	799	0	799	45.7
1995	743	38	781	0	781	48.0
1996	749	38	787	0	787	48.8
1997	810	41	851	0	851	46.3
1998	848	43	891	0	891	45.1
1999	800	41	841	0	841	46.9
2000	785	40	825	0	825	49.0
2001	694	35	729	0	729	54.4
2002	776	40	816	0	816	47.5
2003	794	40	834	0	834	47.8
2004	830	42	873	0	873	46.1
2006	825	42	867	0	867	46.0
2007	821	42	863	0	863	46.0
2008	818	42	860	0	860	46.0
2009	816	42	858	0	858	46.0
2010	812	41	853	0	853	46.0
2011	808	41	850	0	850	46.0
2012	805	41	846	0	846	46.0
2013	801	41	842	0	842	46.0
2014	798	41	839	0	839	46.0
2015	795	41	836	0	836	45.9
2016	792	40	832	1	831	46.0

Annual Growth Rates (%)

1990-2000	0.2	0.2	0.2	0.2	1.0
2000-2001	-11.6	-11.6	-11.6	-11.6	11.0
2000-2004	1.4	1.4	1.4	1.4	-1.6
2004-2008	-0.4	-0.4	-0.4	-0.4	0.0
2008-2016	-0.4	-0.4	-0.4	-0.4	0.0
2004-2016	-0.4	-0.4	-0.4	-0.4	0.0

Form 1.5 - BGP
Noncoincident Peak Demand Temperature Scenarios
Base Case

Year	1-in-2 Temperatures	1-in-5 Temperatures	1-in-10 Temperatures	1-in-20 Temperatures	1-in-5 Multiplier	1-in-10 Multiplier	1-in-20 Multiplier
2006	889	939	948	950	1.057	1.067	1.069
2007	885	935	944	946	1.057	1.067	1.069
2008	881	931	940	942	1.057	1.067	1.069
2009	879	929	938	940	1.057	1.067	1.069
2010	875	924	934	936	1.057	1.067	1.069
2011	871	920	929	931	1.057	1.067	1.069
2012	866	916	925	927	1.057	1.067	1.069
2013	863	911	921	922	1.057	1.067	1.069
2014	859	908	917	919	1.057	1.067	1.069
2015	855	904	913	915	1.057	1.067	1.069
2016	852	900	909	911	1.057	1.067	1.069

Form 2.2 - BGP Planning Area
Planning Area Economic and Demographic Assumptions

Year	Population	Households - Base & Low	Households - High	Per Capita Income - Low (2003$)	Per Capita Income - Base (2003$)	Per Capita Income - HIgh (2003$)	Industrial Value Added (Millions 2003$)	Commercial Floorspace (MM Sqft.)
1980	330,171	140,630	140,630	22,734	22,734	22,734	597	79
1981	333,865	142,312	142,312	23,066	23,066	23,066	614	80
1982	341,251	143,207	143,207	23,057	23,057	23,057	622	81
1983	350,753	144,789	144,789	23,622	23,622	23,622	633	82
1984	358,215	147,495	147,495	24,937	24,937	24,937	685	83
1985	366,082	149,826	149,826	25,748	25,748	25,748	700	84
1986	373,071	152,182	152,182	26,248	26,248	26,248	689	86
1987	379,823	154,030	154,030	26,945	26,945	26,945	785	87
1988	385,817	155,668	155,668	27,407	27,407	27,407	817	89
1989	394,238	157,105	157,105	27,766	27,766	27,766	801	91
1990	396,675	158,063	158,063	28,466	28,466	28,466	779	93
1991	401,208	160,303	160,303	27,233	27,233	27,233	727	94
1992	404,966	161,440	161,440	27,269	27,269	27,269	677	95
1993	406,216	161,500	161,500	26,493	26,493	26,493	675	95
1994	408,612	162,525	162,525	26,444	26,444	26,444	654	95
1995	408,938	163,198	163,198	26,749	26,749	26,749	680	96
1996	408,943	163,530	163,530	27,295	27,295	27,295	703	96
1997	411,164	164,300	164,300	27,780	27,780	27,780	746	96
1998	413,319	164,437	164,437	29,911	29,911	29,911	809	96
1999	417,595	164,789	164,789	30,465	30,465	30,465	879	96
2000	423,850	165,339	165,339	31,213	31,419	31,419	917	97
2001	430,914	166,698	166,698	31,788	32,276	32,276	801	98
2002	437,790	167,223	167,223	31,945	32,610	32,610	724	98
2003	444,758	168,214	168,214	32,016	32,976	32,976	728	100
2004	447,247	168,940	168,940	32,804	33,889	33,889	752	100
2005	449,017	169,393	169,393	33,182	34,974	34,974	776	101
2006	450,778	169,841	169,841	33,410	35,687	35,687	791	102
2007	452,532	170,285	170,285	33,867	36,317	36,317	808	102
2008	454,278	170,724	170,724	34,405	36,978	36,978	829	103
2009	456,016	171,159	171,159	34,889	37,574	37,574	847	104
2010	457,747	171,590	171,590	35,333	38,108	38,108	866	105
2011	458,646	171,708	171,708	35,819	38,672	38,672	884	105
2012	459,543	171,825	171,825	36,309	39,240	39,240	903	106
2013	460,434	171,939	171,939	36,759	39,764	39,764	922	107
2014	461,323	172,052	172,052	37,190	40,281	40,281	940	107
2015	462,207	172,162	172,162	37,742	40,805	40,805	955	108
2016	463,086	172,270	172,270	38,263	41,333	41,333	968	109
Annual Growth Rates (%)								
1990-2000	0.7	0.5	0.5	0.9	1.0	1.0	1.6	0.5
2000-2001	1.7	0.8	0.8	1.8	2.7	2.7	-12.7	0.6
2000-2004	1.4	0.5	0.5	1.2	1.9	1.9	-4.8	0.9
2004-2008	0.4	0.3	0.3	1.2	2.2	2.2	2.4	0.7
2008-2016	0.2	0.1	0.1	1.3	1.4	1.4	2.0	0.7
2004-2016	0.3	0.2	0.2	1.3	1.7	1.7	2.1	0.7

Form 2.3a - BGP Planning Area
Electricity Rate Forecast (2003 cents/kwh)
Base Case

Year	GDP Implicit Price Deflator	Residential	Small Commercial	Medium Commercial	Industrial
1990	75.49	11.93	14.70	14.70	10.24
1991	78.13	11.45	14.22	14.22	9.97
1992	79.92	11.56	14.36	14.36	10.34
1993	81.77	11.69	14.88	14.88	10.36
1994	83.51	11.81	15.33	15.33	10.63
1995	85.22	11.42	14.88	14.88	10.21
1996	86.83	11.06	14.47	14.47	10.10
1997	88.28	12.90	11.68	11.68	10.27
1998	89.26	12.76	13.07	11.93	10.15
1999	90.54	12.58	12.89	11.76	10.01
2000	92.52	12.31	12.61	11.51	9.80
2001	94.74	14.48	15.11	14.09	12.99
2002	96.31	13.16	14.21	13.30	10.14
2003	98.07	12.98	13.60	12.59	9.25
2004	100.00	12.54	12.49	12.49	10.04
2005	101.51	12.46	12.38	12.38	9.96
2006	103.64	12.53	12.45	12.45	10.00
2007	105.58	12.44	12.38	12.38	9.91
2008	107.36	12.36	12.33	12.33	9.82
2009	109.26	12.10	11.99	11.99	9.74
2010	111.24	12.01	11.93	11.93	9.65
2011	113.25	11.92	11.88	11.88	9.56
2012	115.23	11.84	11.82	11.82	9.48
2013	117.23	11.76	11.77	11.77	9.39
2014	119.25	11.67	11.71	11.71	9.31
2015	121.31	11.59	11.65	11.65	9.23
2016	123.42	11.51	11.60	11.60	9.15

Annual Growth Rates (%)

1990-2000	2.1	0.3	-1.5	-2.4	-0.4
2000-2001	2.4	17.6	19.8	22.4	32.6
2000-2003	2.0	1.8	2.5	3.0	-1.9
2003-2008	1.8	-1.0	-1.9	-0.4	1.2
2008-2016	1.8	-0.9	-0.8	-0.8	-0.9
2003-2016	1.8	-0.9	-1.2	-0.6	-0.1

CHAPTER 8

OTHER PLANNING AREA

The Other planning area is a collection of independent utilities not covered in previous chapters utility planning areas. The individual utilities included within the Other planning area do not plan on a coordinated basis. California utilities included in the Other planning area are Imperial Irrigation District, and Truckee Donner Public Utility District. Also included in the Other planning area are the California portions of Sierra Pacific, Pacificorp, and Surprise Valley.

Forecast Results

Table 8-1 presents a comparison electricity consumption and peak demand for selected years.

Table 8-1: Other Planning Area Forecast Comparison

Consumption (GWH)						
	Jun-05	Low	Base	High	Percent Difference Base/Jun-05	Percent Difference High/Low
1990	8,171	8,171	8,171	8,171	0.00%	0.00%
2000	5,490	5,490	5,490	5,490	0.00%	0.00%
2004	8,865	9,654	9,654	9,654	8.90%	0.00%
2008	8,865	9,654	9,654	9,654	8.90%	0.00%
2016	8,865	9,654	9,654	9,654	8.90%	0.00%
Annual Average Growth Rates						
1990-2000	-3.90%	-3.90%	-3.90%	-3.90%		
2000-2004	12.73%	15.16%	15.16%	15.16%		
2004-2008	0.00%	0.00%	0.00%	0.00%		
2004-2016	0.00%	0.00%	0.00%	0.00%		
Peak (MW)						
	Jun-05	Low	Base	High	Percent Difference Base/Draft	Percent Difference High/Low
1990	801	801	801	801	-0.01%	0.00%
2000	1,025	1,025	1,025	1,025	-0.01%	0.00%
2004	1,166	1,148	1,148	1,148	-1.56%	0.00%
2008	1,230	1,278	1,215	1,282	-1.27%	0.29%
2016	1,357	1,403	1,337	1,417	-1.44%	1.06%
Annual Average Growth Rates						
1990-2000	2.50%	2.50%	2.50%	2.50%		
2000-2004	3.26%	2.86%	2.86%	2.86%		
2004-2008	1.35%	2.73%	1.43%	2.80%		
2004-2016	1.27%	1.69%	1.28%	1.77%		
Historic values are shaded						

Figures 8-1 and 8-2 present a comparison of the revised forecast ranges to the June 2005 forecast for electricity consumption and peak demand respectively.

Figure 8-1: Other Planning Area Electricity Forecast

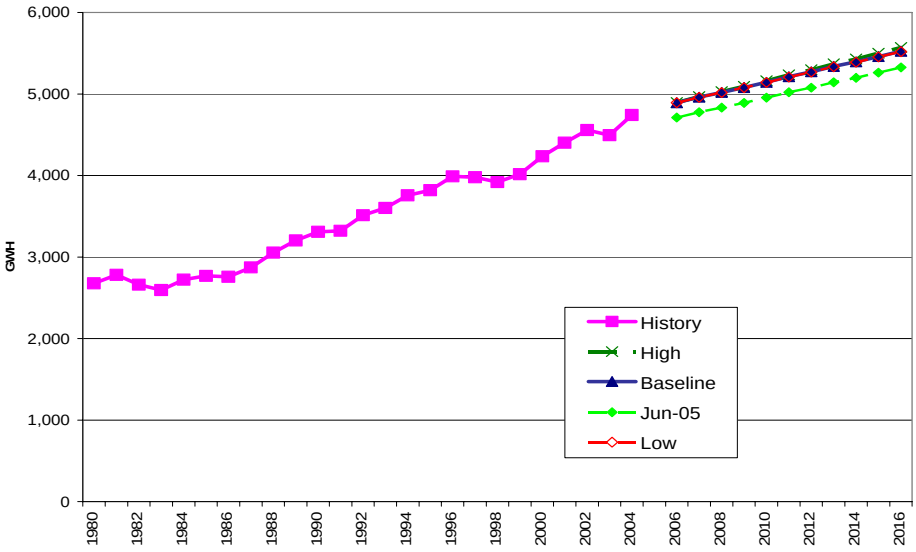
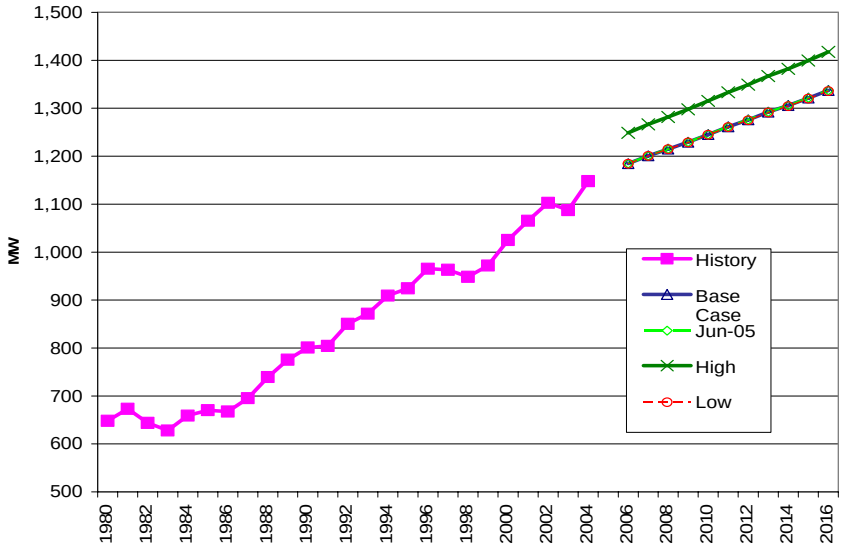


Figure 8-2: Other Planning Area Peak



Form 1.1 - OTHER
Electricity Consumption by Sector (GWh)
Base Case

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighting	Total Consumption
1980	1,253	780	246	15	270	109	3	2,677
1981	1,282	823	239	15	295	123	4	2,781
1982	1,253	826	174	15	269	112	11	2,660
1983	1,221	792	153	21	275	124	10	2,595
1984	1,257	817	187	27	295	130	10	2,722
1985	1,235	839	178	27	332	150	9	2,770
1986	1,218	867	182	38	288	159	6	2,758
1987	1,272	894	164	28	305	203	6	2,872
1988	1,349	937	185	32	316	229	6	3,055
1989	1,418	963	188	35	304	291	5	3,205
1990	1,414	973	166	41	382	326	7	3,310
1991	1,443	1,000	159	42	330	342	7	3,323
1992	1,526	1,081	147	68	341	340	10	3,513
1993	1,545	1,126	154	75	315	376	10	3,602
1994	1,618	1,199	158	60	318	395	10	3,758
1995	1,606	1,218	161	61	348	419	6	3,819
1996	1,772	1,216	178	61	361	394	8	3,989
1997	1,721	1,263	179	59	362	388	8	3,980
1998	1,685	1,316	177	48	341	341	10	3,919
1999	1,802	1,353	179	51	387	235	10	4,017
2000	1,917	1,439	193	57	395	225	10	4,236
2001	1,908	1,547	191	50	439	255	12	4,402
2002	1,956	1,612	199	46	494	238	13	4,557
2003	1,979	1,592	175	48	446	243	11	4,495
2004	2,171	1,679	187	51	413	227	14	4,743
2006	2,247	1,734	183	49	432	236	12	4,894
2007	2,287	1,751	182	49	441	241	12	4,962
2008	2,327	1,758	181	48	449	245	12	5,020
2009	2,367	1,767	179	48	457	250	12	5,080
2010	2,409	1,781	178	47	464	254	12	5,145
2011	2,451	1,797	177	47	470	258	12	5,213
2012	2,494	1,804	176	47	477	263	12	5,272
2013	2,537	1,818	175	46	483	267	13	5,339
2014	2,580	1,822	173	46	490	271	13	5,395
2015	2,625	1,833	173	46	496	275	13	5,460
2016	2,669	1,845	171	46	502	279	13	5,526
Annual Growth Rates (%)								
1980-1990	1.2	2.2	-3.8	10.3	3.5	11.5	7.4	2.1
1990-2000	3.1	4.0	1.5	3.5	0.3	-3.6	3.8	2.5
2000-2004	3.2	3.9	-0.9	-3.1	1.1	0.2	9.0	2.9
2004-2008	1.7	1.2	-0.8	-1.2	2.1	1.9	-3.9	1.4
2008-2016	1.7	0.6	-0.7	-0.7	1.4	1.6	1.0	1.2
2004-2016	1.7	0.8	-0.7	-0.8	1.6	1.7	-0.7	1.3

Form 1.2 - Other
Net Energy for Load (GWh)
Base Case

Year	Total Consumption	Net Losses	Gross Generation	Private Supply	Net Energy for Load
1980	2,677	343	3,020	0	3,020
1981	2,781	356	3,137	0	3,137
1982	2,660	341	3,001	0	3,001
1983	2,595	332	2,928	0	2,928
1984	2,722	348	3,071	0	3,071
1985	2,770	355	3,124	0	3,124
1986	2,758	353	3,111	0	3,111
1987	2,872	368	3,240	0	3,240
1988	3,055	391	3,446	0	3,446
1989	3,205	410	3,615	0	3,615
1990	3,310	424	3,733	0	3,733
1991	3,323	425	3,748	0	3,748
1992	3,513	450	3,963	0	3,963
1993	3,602	461	4,063	0	4,063
1994	3,758	481	4,239	0	4,239
1995	3,819	489	4,308	0	4,308
1996	3,989	511	4,499	0	4,499
1997	3,980	509	4,489	0	4,489
1998	3,919	502	4,421	0	4,421
1999	4,017	514	4,531	0	4,531
2000	4,236	542	4,779	0	4,779
2001	4,402	563	4,966	0	4,966
2002	4,557	583	5,140	0	5,140
2003	4,495	575	5,070	0	5,070
2004	4,743	607	5,350	0	5,350
2006	4,905	628	5,533	0	5,533
2007	4,977	637	5,614	0	5,614
2008	5,039	645	5,684	0	5,684
2009	5,103	653	5,757	0	5,757
2010	5,173	662	5,835	0	5,835
2011	5,245	671	5,916	0	5,916
2012	5,308	679	5,988	0	5,988
2013	5,380	689	6,069	0	6,069
2014	5,442	697	6,138	0	6,138
2015	5,512	706	6,217	0	6,217
2016	5,583	715	6,298	0	6,298

Annual Growth Rates (%)

1980-1990	2.1	2.1	2.1	2.1
1990-2000	2.5	2.5	2.5	2.5
2000-2004	2.9	2.9	2.9	2.9
2004-2008	1.5	1.5	1.5	1.5
2008-2016	1.3	1.3	1.3	1.3
2004-2016	1.4	1.4	1.4	1.4

Form 1.4 - Other Planning Area
Peak Demand (MW)
Base Case

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand	Load Factor (%)
1980	611	37	648	0	648	53.2
1981	635	38	673	0	673	53.2
1982	607	36	644	0	644	53.2
1983	593	36	628	0	628	53.2
1984	622	37	659	0	659	53.2
1985	632	38	670	0	670	53.2
1986	630	38	668	0	668	53.2
1987	656	39	695	0	695	53.2
1988	698	42	739	0	739	53.2
1989	732	44	776	0	776	53.2
1990	756	45	801	0	801	53.2
1991	759	46	804	0	804	53.2
1992	802	48	850	0	850	53.2
1993	822	49	872	0	872	53.2
1994	858	51	909	0	909	53.2
1995	872	52	924	0	924	53.2
1996	911	55	965	0	965	53.2
1997	909	55	963	0	963	53.2
1998	895	54	948	0	948	53.2
1999	917	55	972	0	972	53.2
2000	967	58	1,025	0	1,025	53.2
2001	1,005	60	1,065	0	1,065	53.2
2002	1,040	62	1,103	0	1,103	53.2
2003	1,026	62	1,088	0	1,088	53.2
2004	1,083	65	1,148	0	1,148	53.2
2005	1,103	66	1,169	0	1,169	53.2
2006	1,119	67	1,186	0	1,186	53.3
2007	1,135	68	1,203	0	1,203	53.3
2008	1,148	69	1,217	0	1,217	53.3
2009	1,162	70	1,231	0	1,231	53.4
2010	1,177	71	1,247	0	1,247	53.4
2011	1,192	72	1,264	0	1,264	53.4
2012	1,206	72	1,278	0	1,278	53.5
2013	1,221	73	1,294	0	1,294	53.5
2014	1,234	74	1,308	0	1,308	53.6
2015	1,249	75	1,324	0	1,324	53.6
2016	1,264	76	1,340	0	1,340	53.7

Annual Growth Rates (%)

1990-2000	2.5	2.5	2.5	2.5
2000-2001	3.9	3.9	3.9	3.9
2000-2004	2.9	2.0	2.0	2.0
2004-2008	1.5	2.3	2.3	2.3
2008-2016	1.2	1.2	1.2	1.2
2004-2016	1.3	1.6	1.6	1.6

Form 1.5 - OTHER
Noncoincident Peak Demand Temperature Scenarios
Base Case

Year	1-in-2 Temperatures	1-in-5 Temperatures	1-in-10 Temperatures	1-in-20 Temperatures	1-in-5 Multiplier	1-in-10 Multiplier	1-in-20 Multiplier
2006	1,186	1,238	1,269	1,291	1.043	1.070	1.088
2007	1,203	1,255	1,287	1,308	1.043	1.070	1.088
2008	1,217	1,269	1,302	1,324	1.043	1.070	1.088
2009	1,231	1,285	1,317	1,340	1.043	1.070	1.088
2010	1,247	1,301	1,334	1,357	1.043	1.070	1.088
2011	1,264	1,318	1,352	1,375	1.043	1.070	1.088
2012	1,278	1,333	1,367	1,390	1.043	1.070	1.088
2013	1,294	1,350	1,385	1,408	1.043	1.070	1.088
2014	1,308	1,365	1,399	1,423	1.043	1.070	1.088
2015	1,324	1,381	1,416	1,440	1.043	1.070	1.088
2016	1,340	1,398	1,433	1,458	1.043	1.070	1.088

Form 2.3a - Other Planning Area
Electricity Rate Forecast (2003 cents/kwh)
Base Case

Year	GDP Implicit Price Deflator	Residential	Commercial	Industrial	Agriculture
1990	75.49				
1991	78.13				
1992	79.92				
1993	81.77				
1994	83.51				
1995	85.22				
1996	86.83				
1997	88.28				
1998	89.26				
1999	90.54				
2000	92.52				
2001	94.74				
2002	96.31				
2003	98.07				
2004	100.00	11.40			9.30
2005	101.51	11.40	11.10	11.10	9.30
2006	103.64	11.40	11.10	11.10	9.30
2007	105.58	11.40	11.10	11.10	9.30
2008	107.36	11.40	11.10	11.10	9.30
2009	109.26	11.40	11.10	11.10	9.30
2010	111.24	11.40	11.10	11.10	9.30
2011	113.25	11.40	11.10	11.10	9.30
2012	115.23	11.40	11.10	11.10	9.30
2013	117.23	11.40	11.10	11.10	9.30
2014	119.25	11.40	11.10	11.10	9.30
2015	121.31	11.40	11.10	11.10	9.30
2016	123.42	11.40	11.10	11.10	9.30

Annual Growth Rates (%)

1990-2000	2.1
2000-2001	2.4
2000-2004	2.0
2004-2008	1.8
2008-2016	1.8
2004-2016	1.8

Form 2.2 - Other Planning Area
Planning Area Economic and Demographic Assumptions
Base Case

Year	Population	Households - Base & Low	Households - High	Per Capita Income - Low (2003$)	Per Capita Income - Base (2003$)	Per Capita Income - HIgh (2003$)	Industrial Value Added (Millions	Commercial Floorspace (MM Sqft.)
1980	279,043	99,379	99,379	22,654	22,654	22,654	881	26
1981	283,517	101,440	101,440	21,772	21,772	21,772	866	26
1982	287,332	102,860	102,860	21,588	21,588	21,588	700	27
1983	295,609	105,165	105,165	22,108	22,108	22,108	770	27
1984	303,750	108,203	108,203	22,872	22,872	22,872	959	27
1985	311,143	110,849	110,849	22,981	22,981	22,981	925	27
1986	319,996	114,138	114,138	23,391	23,391	23,391	663	28
1987	328,088	117,058	117,058	24,177	24,177	24,177	819	28
1988	341,568	121,588	121,588	25,020	25,020	25,020	655	28
1989	350,716	125,288	125,288	25,237	25,237	25,237	647	29
1990	359,987	127,492	127,492	25,279	25,279	25,279	605	30
1991	373,727	130,963	130,963	24,438	24,438	24,438	735	30
1992	384,251	133,591	133,591	24,373	24,373	24,373	788	31
1993	392,781	135,633	135,633	24,709	24,709	24,709	605	31
1994	395,922	137,561	137,561	24,468	24,468	24,468	586	31
1995	398,714	139,325	139,325	24,430	24,430	24,430	616	31
1996	402,487	140,649	140,649	24,434	24,434	24,434	678	32
1997	409,112	142,505	142,505	25,257	25,257	25,257	684	32
1998	411,461	144,572	144,572	26,642	26,642	26,642	538	32
1999	417,837	146,890	146,890	27,183	27,183	27,183	1,315	32
2000	425,921	148,595	148,595	27,403	27,581	27,581	1,772	32
2001	437,370	151,609	151,609	27,964	28,230	28,230	1,595	32
2002	448,427	154,996	154,996	28,445	28,459	28,459	1,548	32
2003	458,502	158,690	158,690	28,976	28,430	28,430	1,279	33
2004	467,876	162,996	162,996	29,520	28,978	28,978	1,343	34
2005	477,200	165,505	165,607	29,983	29,530	29,513	1,366	34
2006	486,477	167,990	168,200	30,336	30,155	30,122	1,367	35
2007	495,711	170,451	170,778	30,827	30,627	30,573	1,375	35
2008	504,898	172,885	173,338	31,474	31,155	31,082	1,387	36
2009	514,031	175,295	175,882	32,076	31,651	31,555	1,393	36
2010	523,057	177,656	178,384	32,654	32,098	31,979	1,398	37
2011	531,559	180,205	181,085	33,291	32,582	32,438	1,405	37
2012	540,009	182,727	183,764	33,924	33,050	32,879	1,414	38
2013	548,392	185,216	186,420	34,535	33,491	33,295	1,419	38
2014	556,727	187,678	189,057	35,157	33,942	33,716	1,423	39
2015	565,001	190,108	191,669	35,655	34,375	34,121	1,434	39
2016	573,217	192,507	194,260	36,122	34,758	34,470	1,444	39
Annual Growth Rates (%)								
1990-2000	1.7	1.5	1.5	0.8	0.9	0.9	11.3	0.5
2000-2001	2.7	2.0	2.0	2.0	2.4	2.4	-10.0	0.7
2000-2003	2.5	2.2	2.2	1.9	1.0	1.0	-10.3	1.8
2003-2008	1.9	1.7	1.8	1.7	1.8	1.8	1.6	1.4
2008-2016	1.6	1.4	1.4	1.7	1.4	1.3	0.5	1.2
2003-2016	1.7	1.5	1.6	1.7	1.6	1.5	0.9	1.3

CHAPTER 9

DWR PLANNING AREA

The California Department of Water Resources (DWR) planning area is defined as the pumping operations of the State Water Project. This pumping is required to deliver water from the Delta in northern California to other parts of the state.

Forecast Results

Table 9-1 presents a comparison of electricity consumption and peak demand for selected years. Due to lack of specific forecast information the forecast for the DWR planning area was held constant at the 2004 level for both electricity consumption and peak. DWR pumping load has increased over the last few years because of dry winters and decreases in water supply from other sources such as the Colorado River. It is anticipated that the State Water Project will continue to operate at this higher level of energy use as more population and economic growth occur in the southern part of the state.

Table 9-1: DWR Planning Area Forecast Comparison

Consumption (GWH)						
	Jun-05	Low	Base	High	Percent Difference Base/Jun-05	Percent Difference High/Low
1990	8,171	8,171	8,171	8,171	0.00%	0.00%
2000	5,490	5,490	5,490	5,490	0.00%	0.00%
2004	8,865	9,654	9,654	9,654	8.90%	0.00%
2008	8,865	9,654	9,654	9,654	8.90%	0.00%
2016	8,865	9,654	9,654	9,654	8.90%	0.00%
Annual Average Growth Rates						
1990-2000	-3.90%	-3.90%	-3.90%	-3.90%		
2000-2004	12.73%	15.16%	15.16%	15.16%		
2004-2008	0.00%	0.00%	0.00%	0.00%		
2004-2016	0.00%	0.00%	0.00%	0.00%		
Peak (MW)						
	Jun-05	Low	Base	High	Percent Difference Base/Draft	Percent Difference High/Low
1990	250	774	774	774	209.69%	0.00%
2000	250	520	520	520	108.08%	0.00%
2004	840	915	915	915	8.90%	0.00%
2008	840	915	915	915	8.90%	0.00%
2009	840	915	915	915	8.90%	0.00%
Annual Average Growth Rates						
1990-2000	0.00%	-3.90%	-3.90%	-3.90%		
2000-2004	35.39%	15.16%	15.16%	15.16%		
2004-2008	0.00%	0.00%	0.00%	0.00%		
2004-2016	0.00%	0.00%	0.00%	0.00%		
Historic values are shaded						

Form 1.1 - DWR
Electricity Consumption by Sector (GWh)

Year	Residential	Commercial	Industrial	Mining	Agricultural	TCU	Streetlighting	Total Consumption
1980					3,354			3,354
1981					5,264			5,264
1982					5,192			5,192
1983					2,497			2,497
1984					3,349			3,349
1985					5,410			5,410
1986					5,031			5,031
1987					4,734			4,734
1988					5,928			5,928
1989					7,413			7,413
1990					8,171			8,171
1991					4,400			4,400
1992					4,088			4,088
1993					4,372			4,372
1994					4,946			4,946
1995					3,562			3,562
1996					5,146			5,146
1997					5,504			5,504
1998					3,421			3,421
1999					5,490			5,490
2000					5,490			5,490
2001					6,349			6,349
2002					8,181			8,181
2003					8,865			8,865
2004					9,654			9,654
2006					9,654			9,654
2007					9,654			9,654
2008					9,654			9,654
2009					9,654			9,654
2010					9,654			9,654
2011					9,654			9,654
2012					9,654			9,654
2013					9,654			9,654
2014					9,654			9,654
2015					9,654			9,654
2016					9,654			9,654

Annual Growth Rates (%)		
1980-1990	9.3	9.3
1990-2000	-3.9	-3.9
2000-2004	15.2	15.2
2004-2008	0.0	0.0
2008-2016	0.0	0.0
2004-2016	0.0	0.0

Form 1.2 - DWR
Net Energy for Load (GWh)

Year	Total Consumption	Net Losses	Gross Generation	Private Supply	Net Energy for Load
1980	3,354	127	3,481	0	3,481
1981	5,264	200	5,464	0	5,464
1982	5,192	197	5,389	0	5,389
1983	2,497	95	2,592	0	2,592
1984	3,349	127	3,476	0	3,476
1985	5,410	206	5,616	0	5,616
1986	5,031	191	5,222	0	5,222
1987	4,734	180	4,913	0	4,913
1988	5,928	225	6,154	0	6,154
1989	7,413	282	7,694	0	7,694
1990	8,171	311	8,482	0	8,482
1991	4,400	167	4,567	0	4,567
1992	4,088	155	4,243	0	4,243
1993	4,372	166	4,538	0	4,538
1994	4,946	188	5,133	0	5,133
1995	3,562	135	3,698	0	3,698
1996	5,146	196	5,342	0	5,342
1997	5,504	209	5,713	0	5,713
1998	3,421	130	3,551	0	3,551
1999	5,490	209	5,699	0	5,699
2000	5,490	209	5,699	0	5,699
2001	6,349	269	6,619	0	6,619
2002	8,181	347	8,528	0	8,528
2003	8,865	376	9,241	0	9,241
2004	9,654	410	10,064	0	10,064
2006	9,654	410	10,064	0	10,064
2007	9,654	410	10,064	0	10,064
2008	9,654	410	10,064	0	10,064
2009	9,654	410	10,064	0	10,064
2010	9,654	410	10,064	0	10,064
2011	9,654	410	10,064	0	10,064
2012	9,654	410	10,064	0	10,064
2013	9,654	410	10,064	0	10,064
2014	9,654	410	10,064	0	10,064
2015	9,654	410	10,064	0	10,064
2016	9,654	410	10,064	0	10,064

Annual Growth Rates (%)

1980-1990	9.3	9.3	9.3	#DIV/0!	9.3
1990-2000	-3.9	-3.9	-3.9	#DIV/0!	-3.9
2000-2004	15.2	18.4	15.3	#DIV/0!	15.3
2004-2008	0.0	0.0	0.0	#DIV/0!	0.0
2008-2016	0.0	0.0	0.0	#DIV/0!	0.0
2004-2016	0.0	0.0	0.0	#DIV/0!	0.0

Form 1.4 - DWR
Peak Demand (MW)

Year	Total End Use Load	Net Losses	Gross Generation	Private Supply	Net Peak Demand
1980	300	18	318		241
1981	471	28	499		397
1982	464	28	492		256
1983	223	13	237		220
1984	299	18	317		93
1985	484	29	513		250
1986	450	27	477		422
1987	423	25	449		251
1988	530	32	562		250
1989	663	40	702		250
1990	730	44	774		250
1991	393	24	417		417
1992	365	22	387		387
1993	391	23	414		414
1994	442	27	469		469
1995	318	19	338		338
1996	460	28	488		488
1997	492	30	521		521
1998	306	18	324		324
1999	491	29	520		520
2000	491	29	520		520
2001	568	34	602		602
2002	731	44	775		775
2003	792	48	840		840
2004	863	52	915		915
2006	863	52	915		915
2007	863	52	915		915
2008	863	52	915		915
2009	863	52	915		915
2010	863	52	915		915
2011	863	52	915		915
2012	863	52	915		915
2013	863	52	915		915
2014	863	52	915		915
2015	863	52	915		915
2016	863	52	915		915

Annual Growth Rates (%)				
1980-1990	9.3	9.3	9.3	0.4
1990-2000	-3.9	-3.9	-3.9	7.6
2000-2001	15.6	15.6	15.6	15.6
2000-2004	15.2	15.2	15.2	15.2
2004-2008	0.0	0.0	0.0	0.0
2008-2016	0.0	0.0	0.0	0.0
2004-2016	0.0	0.0	0.0	0.0

CHAPTER 10
NATURAL GAS DEMAND FORECAST

This chapter presents the staff revised forecasts of end user natural gas demand, for the state and for the PG&E, SCG, and SDG&E natural gas planning areas. Staff prepares these forecasts in parallel with its electricity demand forecasts. The models used by staff are organized along electricity planning area boundaries. The gas demand forecasts presented here are the aggregate of gas demand in the corresponding electricity planning areas. These forecasts do not include natural gas used by utilities or others for electric generation.

The revised forecasts incorporate new forecasts of natural gas prices, consumption data from 2004, some new demographic information in the residential sector, and revised projections of per capita personal income. See Chapter One for a discussion of revised base case assumptions. All other model inputs are the same.

Forecast Results

Table 10-1 compares the statewide revised forecast with June 2005 for selected years. The forecast is higher in the near term because recorded 2004 consumption was higher than forecast in June 2005. Because the revised forecast uses a higher forecast of natural gas prices, however, the revised forecast has a lower growth rate .

Table 10-1: Statewide Natural Gas Forecast Comparison

	Consumption (MM Therms)		
	Jun-05	Revised	Percent Difference
1990	12,893	12,893	0.00%
2000	13,931	13,915	-0.12%
2004	13,402	13,565	1.22%
2008	13,517	13,528	0.08%
2016	14,091	13,850	-1.71%
Annual Average Growth Rates			
1990-2000	0.78%	0.77%	
2000-2004	-0.96%	-0.64%	
2004-2008	0.21%	-0.07%	
2004-2016	0.42%	0.17%	
Historic values are shaded			

Figure 10-1 compares the forecast by region. Figure 10-2 compares the old and new per capita natural gas consumption forecasts. Annual per capita demand varies in response to annual temperatures and business conditions, but has generally been declining over time. Projected per capita consumption in the revised forecast is lower

than that projected in the Jun-05 forecast. This is due to reduced consumption levels resulting from higher gas prices than were previously anticipated. Both forecasts project a steady decline in per capita consumption over the forecast period.

Figure 10-1
Natural Gas Demand Forecast

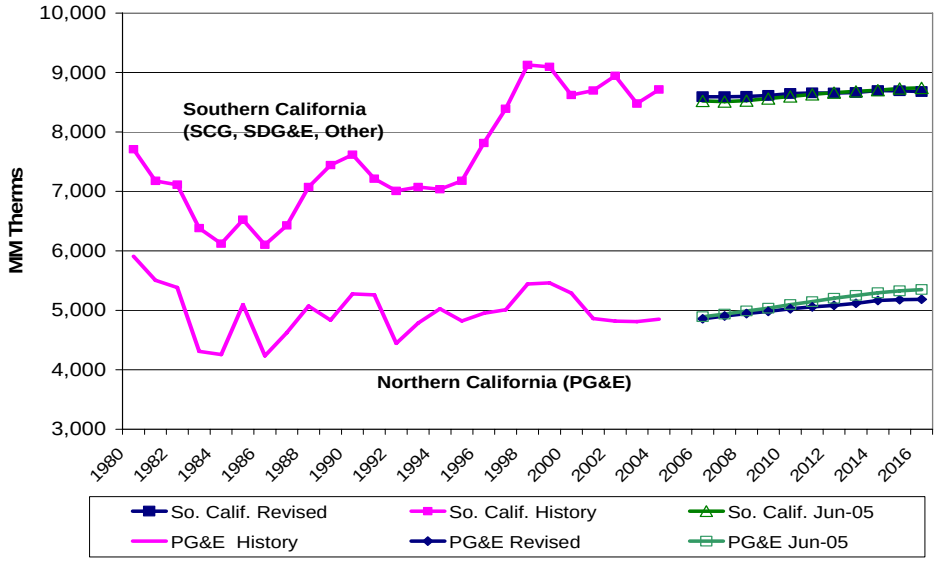
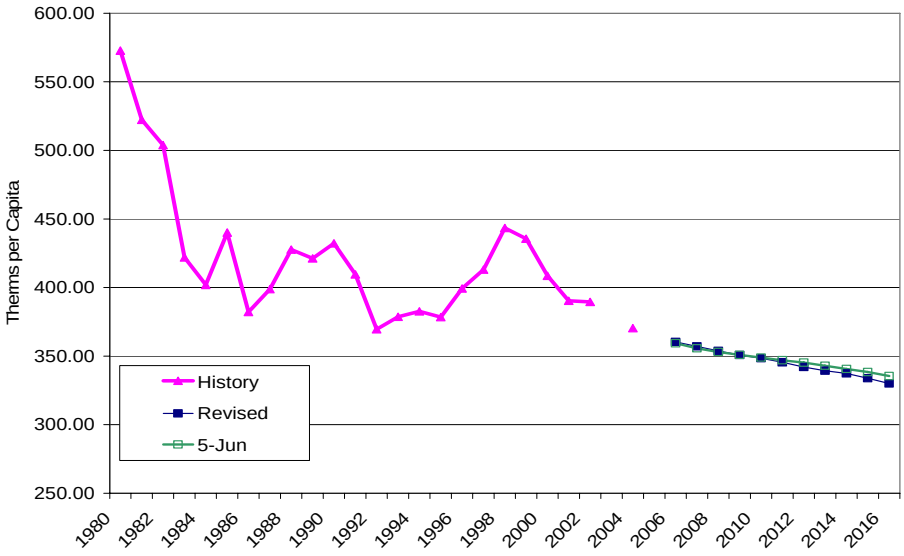


Figure 10-2
Statewide Per Capita Natural Gas Consumption



Planning Area Results

Pacific Gas and Electric Planning Area

The PG&E natural gas planning area is defined as the combined PG&E and SMUD electric planning areas. It includes all PG&E retail gas customers, and customers of private marketers using the PG&E natural gas distribution system.

Table 10-2 compares the PG&E planning area forecasts. Demand in 2004 was only slightly higher than forecast in June 2005. Because of higher natural gas prices, by the end of the forecast period, forecasted demand is more than three percent lower.

Table 10-2: PG&E Natural Gas Forecast Comparison

	Consumption (MM Therms)		
	Jun-05	Revised	Percent Difference
1990	5,275	5,275	0.00%
2000	5,308	5,291	-0.31%
2004	4,836	4,849	0.27%
2008	4,990	4,940	-1.00%
2016	5,350	5,181	-3.15%
Annual Average Growth Rates			
1990-2000	0.06%	0.03%	
2000-2004	-2.30%	-2.16%	
2004-2008	0.78%	0.46%	
2004-2016	0.84%	0.55%	
Historic values are shaded			

Figure 10-3 compares the revised and June 2005 PG&E planning area residential forecasts. The revised forecast is higher throughout the entire forecast period, but the two forecasts have the same growth rate. Residential consumption is less price-sensitive than the nonresidential sector.

Figure 10-3: PG&E Planning Area Residential Consumption

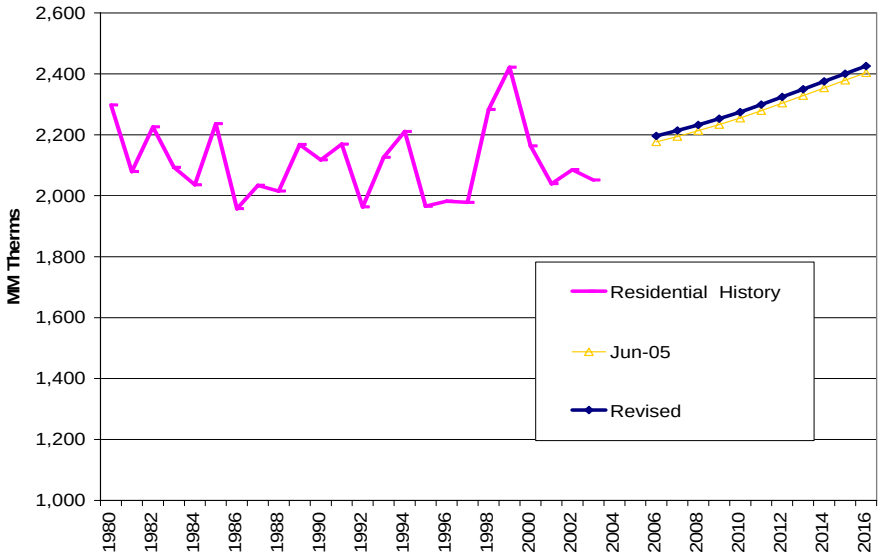


Figure 10-4 provides a comparison of the revised and June commercial sector gas demand forecasts. Because of higher gas prices, commercial demand in the revised forecast declines at -0.6 percent annually, compared to -0.3 percent in the June forecast. Commercial sector growth is dampened further by the effects of building and appliance standards.

Figure 10-4
PG&E Planning Area Commercial Gas Demand

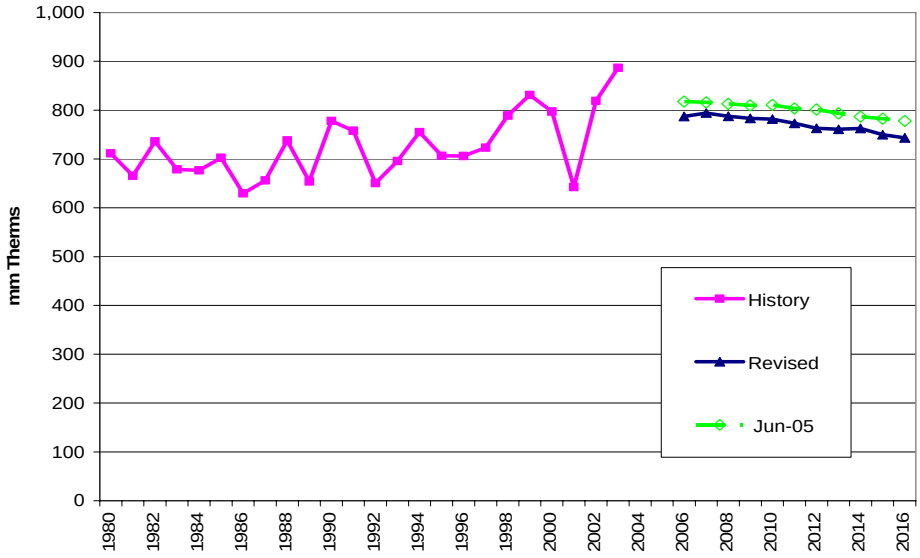


Figure 10-5 shows a similar effect in the industrial sector, with demand in the revised forecast growing at less than one percent per year.

Figure 10-5: PG&E Planning Area Industrial Natural Gas Demand

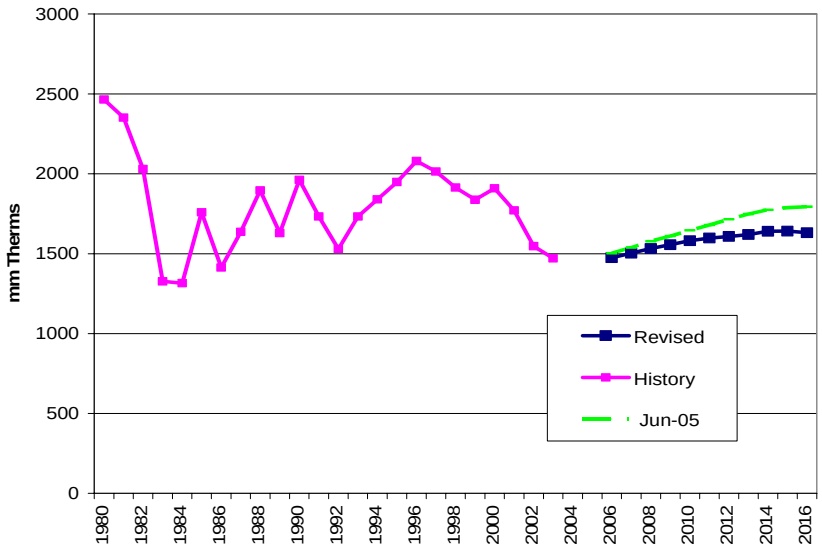
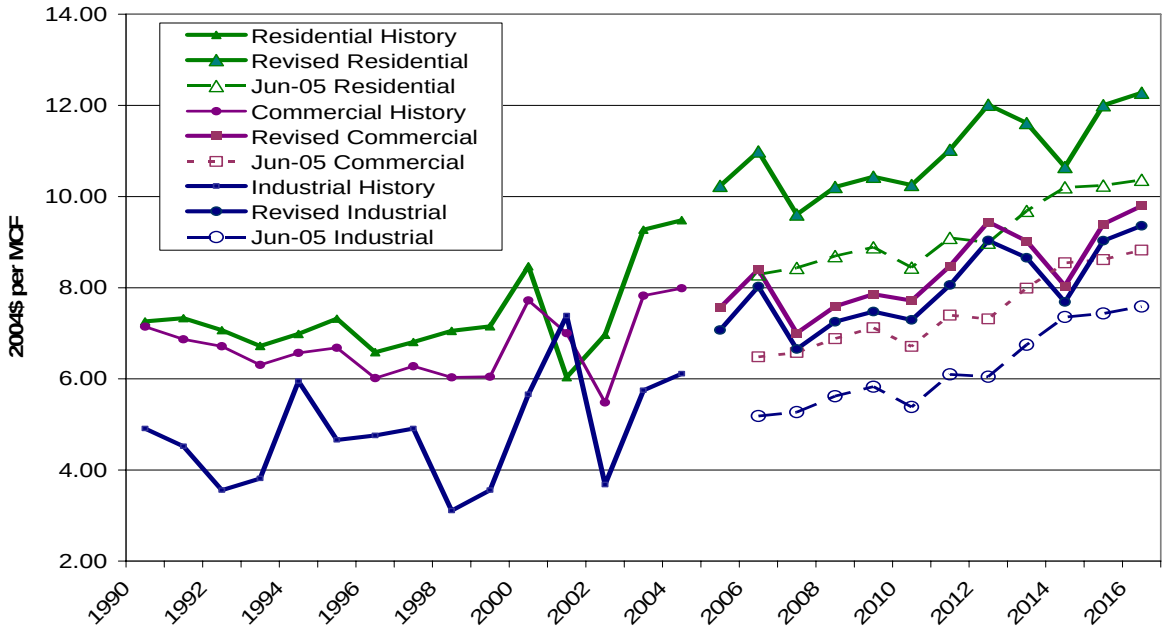


Figure 10-6 compares natural gas prices forecasts used for the June and revised forecasts. The new price forecast was developed in July 2005 from the results of the Commission's NARG model. In the new forecasts, prices are almost thirty percent higher on average for industrial customers, ten percent higher for commercial customers, and eighteen percent higher for residential customers.

Figure 10-6
PG&E Natural Gas Price Forecast



Southern California Gas Company Planning Area

The SCG planning area is comprised of the SCE, BGP, and LADWP electric planning areas. It includes customers of those utilities, plus customers of private marketers using the SCG natural gas distribution system.

Table 10-3 provides a comparison of the SCG planning area forecasts. The revised forecast is slightly higher in the short term due to a higher starting point than was projected in the Jun-05 forecast, but the effect of higher gas prices results in the revised forecast being lower by the end of the forecast period.

Table 10-3
SCG Natural Gas Forecast Comparison

	Consumption (MM Therms)		
	Jun-05	Revised	Percent Difference
1990	6,806	6,806	0.00%
2000	7,939	7,939	0.00%
2004	7,890	8,042	1.92%
2008	7,824	7,892	0.86%
2016	7,981	7,924	-0.72%
Annual Average Growth Rates			
1990-2000	1.55%	1.55%	
2000-2004	-0.15%	0.32%	
2004-2008	-0.21%	-0.47%	
2004-2016	0.10%	-0.12%	
Historic values are shaded			

Figure 10-7 provides a comparison of the residential gas demand forecasts. The revised forecast is higher throughout the forecast period due to a higher starting point, but the growth rates are similar.

Figure 10-7: SCG Planning Area Residential Natural Gas Consumption

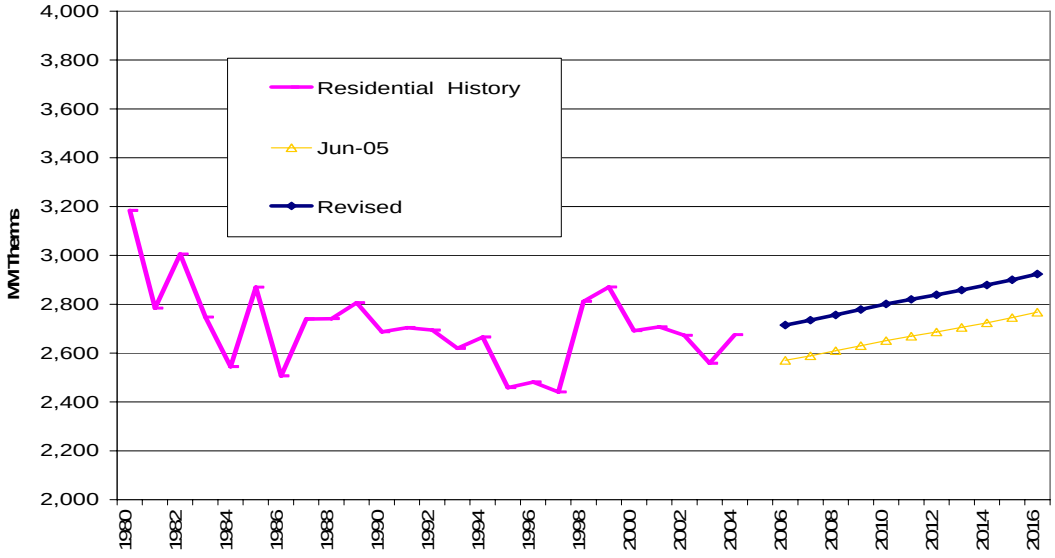


Figure 10-8 compares the commercial sector forecasts. In the revised forecast higher gas prices have reduced the projected rate of growth by half. In Figure 10-9, a similar effect is seen in the industrial sector.

Figure 10-8: SCG Planning Area
Commercial Natural Gas Consumption

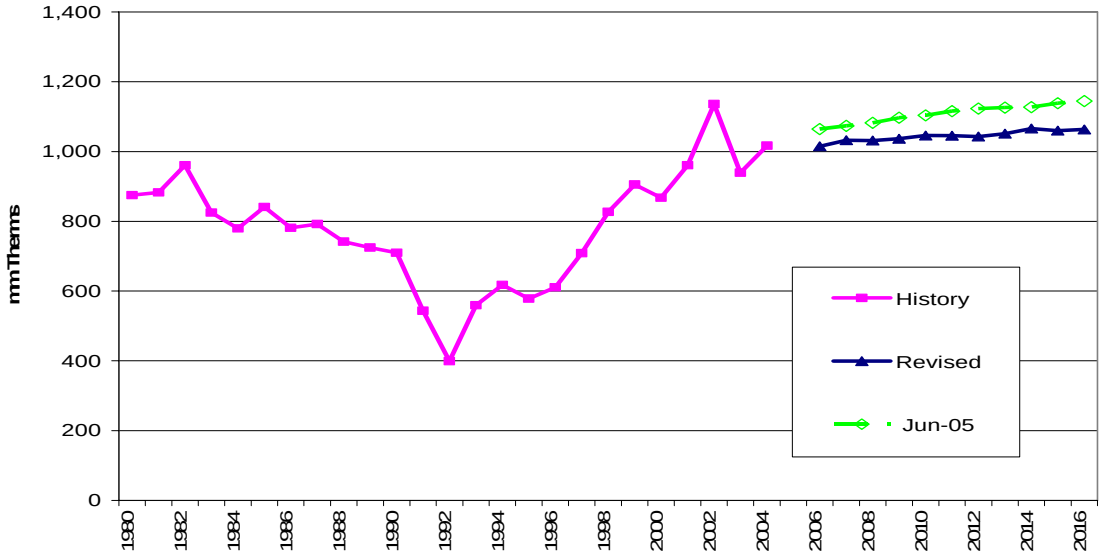


Figure 10-9: SCG Planning Area
Industrial and Mining Natural Gas Consumption

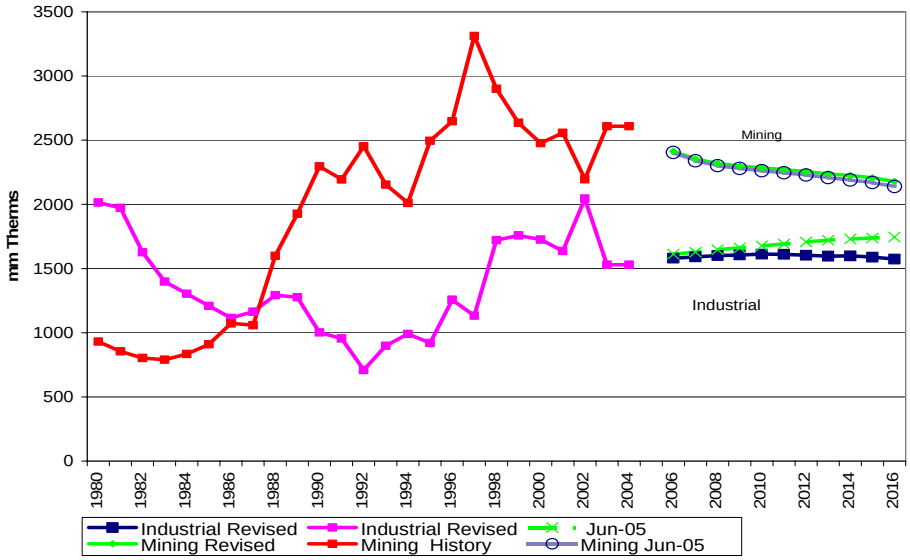
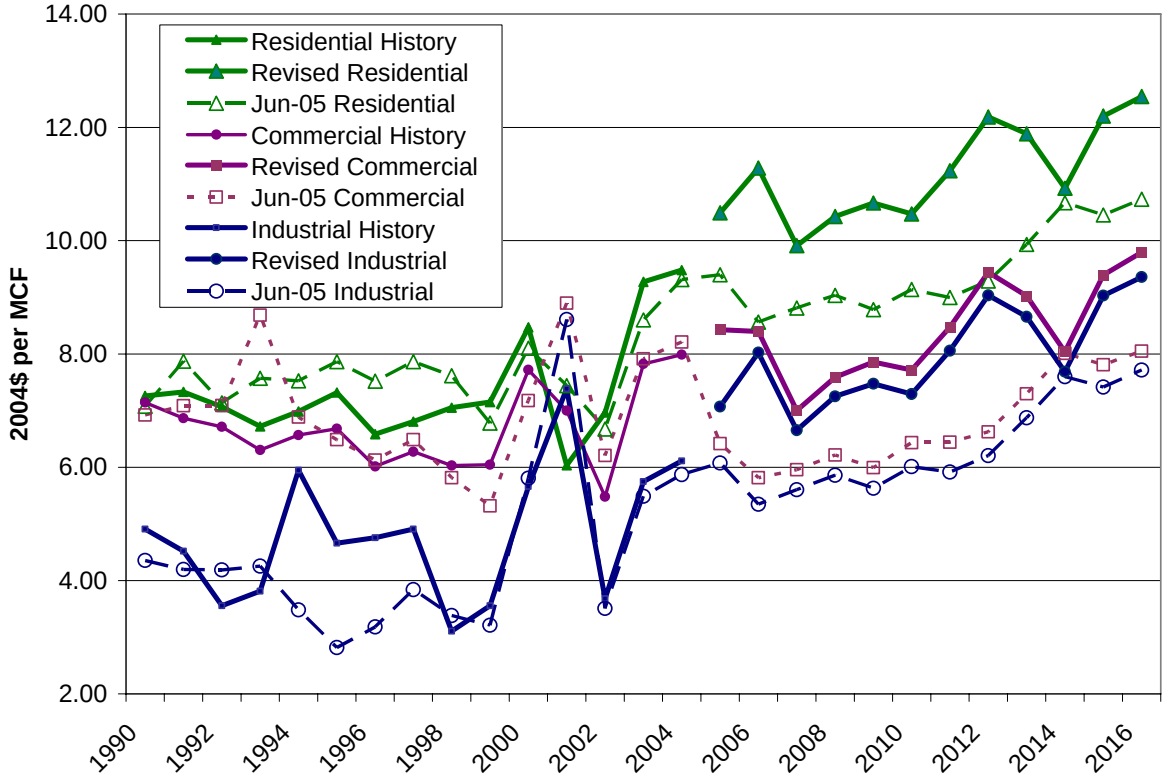


Figure 10-10 shows the price forecasts for the three sectors.

Figure 10-10: SCG Planning Area Natural Gas Price Forecast



San Diego Gas and Electric Planning Area

The SDG&E planning area contains SDG&E customers, plus customers of private marketers using the SDG&E natural gas distribution system.

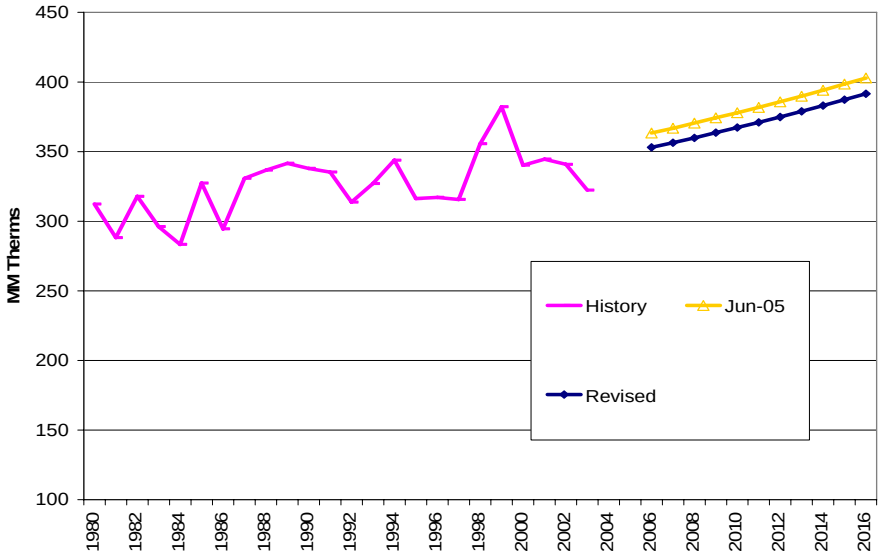
Table 10-4 provides a comparison of the SDG&E planning area forecasts. The revised forecast is lower in the short term due to a lower starting point than was projected in the June 2005 forecast. Because of the effects of higher natural gas prices and, the growth rate of the revised forecast is slightly lower than June.

Table 10-4: SDG&E Natural Gas Forecast Comparison

	Consumption (MM Therms)		
	Jun-05	Revised	Percent Difference
1990	517	517	0.00%
2000	566	566	0.00%
2004	544	545	0.21%
2008	568	566	-0.40%
2016	619	611	-1.18%
Annual Average Growth Rates			
1990-2000	0.90%	0.90%	
2000-2004	-0.97%	-0.92%	
2004-2008	1.08%	0.93%	
2004-2016	1.08%	0.96%	
Historic values are shaded			

Figure 10-11 provides comparisons of the SDGE planning area residential gas consumption forecasts. Residential consumption in 2004 was lower than forecast, but the revised growth rate is unchanged.

Figure 10-11: SDG&E Planning Area Residential Natural Gas Consumption



In the SDG&E nonresidential sector (Figure 10-12), the revised forecast starts higher but grows somewhat slower, because of rising natural gas prices, shown in Figure 10-13.

Figure 10-12: SDG&E Planning Area Nonresidential Natural Gas Consumption

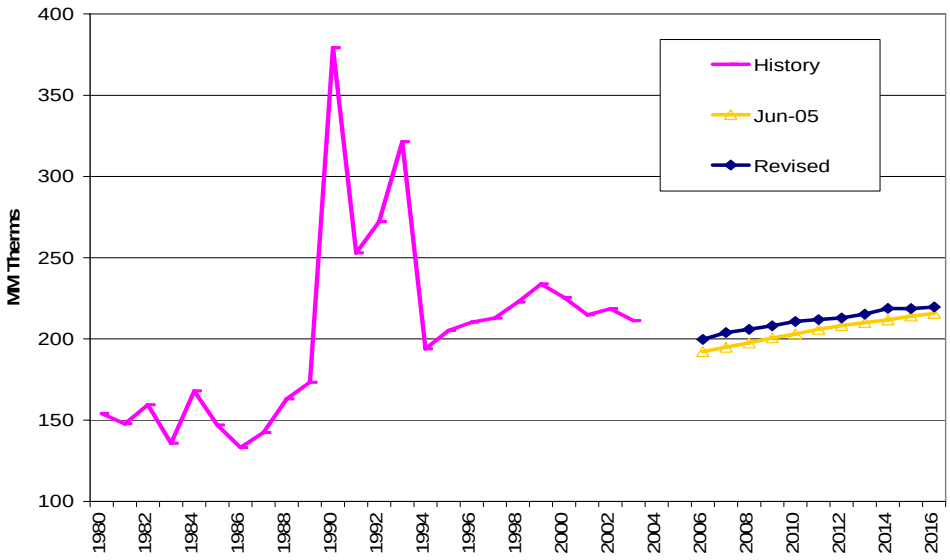


Figure 10-13: SDG&E Planning Area Prices

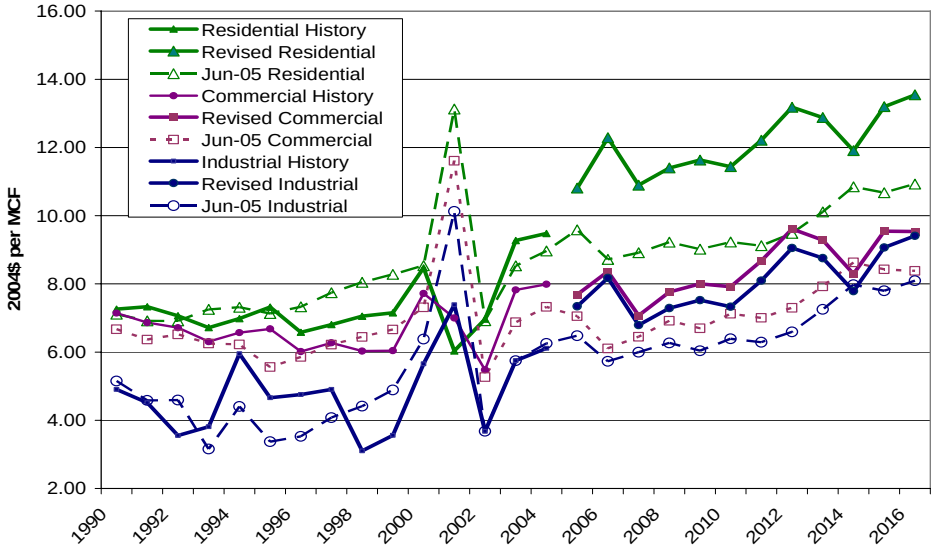


Table 10-5 - PG&E Planning Area
California Energy Demand 2006-2016 Staff Forecast
Natural Gas Consumption by Sector (10^6 Therms)

	Residential	Commercial	Industrial	Mining	Agricultural	Other	Total Consumption
1980	2,298	712	2,464	250	73	113	5,909
1981	2,079	665	2,351	228	62	116	5,503
1982	2,226	736	2,029	215	58	122	5,385
1983	2,093	679	1,326	58	49	106	4,311
1984	2,036	677	1,316	74	48	106	4,256
1985	2,236	702	1,758	234	52	114	5,096
1986	1,958	630	1,413	89	46	101	4,237
1987	2,034	656	1,637	148	50	101	4,626
1988	2,015	738	1,895	207	56	159	5,070
1989	2,168	654	1,630	216	59	108	4,834
1990	2,118	778	1,962	238	65	114	5,275
1991	2,169	758	1,733	418	60	122	5,260
1992	1,963	651	1,530	162	50	90	4,445
1993	2,126	696	1,732	96	40	95	4,786
1994	2,211	755	1,840	71	52	98	5,027
1995	1,966	707	1,948	77	47	76	4,821
1996	1,982	706	2,080	44	55	81	4,948
1997	1,978	723	2,014	163	64	67	5,010
1998	2,283	789	1,914	319	70	67	5,442
1999	2,422	831	1,837	236	71	64	5,461
2000	2,164	797	1,909	288	79	55	5,291
2001	2,039	642	1,771	295	50	67	4,864
2002	2,086	819	1,547	272	59	35	4,818
2003	2,051	887	1,471	268	85	49	4,811
2004	2,163	804	1,466	281	86	49	4,849
2006	2,196	787	1,475	260	87	49	4,854
2007	2,214	794	1,503	254	88	49	4,902
2008	2,233	788	1,532	251	88	49	4,940
2009	2,253	783	1,556	249	88	49	4,979
2010	2,275	782	1,581	249	89	49	5,024
2011	2,299	773	1,597	248	89	49	5,055
2012	2,324	763	1,608	248	89	49	5,080
2013	2,350	761	1,620	247	89	49	5,115
2014	2,375	763	1,640	247	89	49	5,163
2015	2,401	750	1,641	246	89	49	5,175
2016	2,426	743	1,631	243	89	49	5,181
Annual Growth Rates (%)							
1980-1990	-0.8	0.9	-2.3	-0.5	-1.2	0.1	-1.1
1990-2000	0.2	0.2	-0.3	1.9	1.9	-6.9	0.0
2000-2004	0.0	0.2	-6.4	-0.6	2.2	-3.1	-2.2
2004-2008	0.8	-0.5	1.1	-2.8	0.7	0.0	0.5
2008-2016	1.0	-0.7	0.8	-0.4	0.1	0.0	0.6
2004-2016	1.0	-0.6	0.9	-1.2	0.3	0.0	0.6

Table 10-6 - SCG Planning Area
California Energy Demand 2006-2016 Staff Forecast
Natural Gas Consumption by Sector (10^6 Therms)

	Residential	Commercial	Industrial	Mining	Agricultural	Other	Total Consumption
1980	3,184	875	2,014	930	71	94	7,168
1981	2,784	883	1,973	854	80	102	6,676
1982	3,006	961	1,626	803	70	111	6,577
1983	2,747	825	1,398	790	50	88	5,898
1984	2,545	779	1,303	834	54	84	5,599
1985	2,870	841	1,208	910	53	83	5,965
1986	2,507	782	1,115	1,073	44	80	5,600
1987	2,740	792	1,164	1,058	44	78	5,875
1988	2,741	742	1,292	1,598	44	69	6,487
1989	2,806	725	1,276	1,927	41	64	6,838
1990	2,687	710	1,002	2,295	45	67	6,806
1991	2,705	543	954	2,194	34	109	6,539
1992	2,694	399	710	2,452	26	47	6,329
1993	2,620	559	899	2,153	33	58	6,322
1994	2,666	617	990	2,011	44	62	6,390
1995	2,459	578	919	2,494	40	67	6,557
1996	2,482	611	1,257	2,646	48	130	7,174
1997	2,441	709	1,132	3,311	63	87	7,743
1998	2,812	827	1,721	2,900	69	87	8,416
1999	2,870	905	1,757	2,635	87	92	8,347
2000	2,692	867	1,725	2,476	90	87	7,939
2001	2,707	960	1,637	2,556	86	74	8,021
2002	2,673	1,136	2,045	2,195	114	99	8,261
2003	2,558	939	1,529	2,608	102	77	7,814
2004	2,675	1,017	1,581	2,584	103	82	8,042
2006	2,715	1,015	1,580	2,413	103	82	7,908
2007	2,735	1,032	1,591	2,353	103	82	7,896
2008	2,757	1,031	1,601	2,318	103	82	7,892
2009	2,779	1,036	1,605	2,297	103	82	7,903
2010	2,802	1,046	1,612	2,284	103	82	7,928
2011	2,820	1,045	1,610	2,271	103	82	7,932
2012	2,839	1,043	1,603	2,254	103	82	7,924
2013	2,858	1,051	1,597	2,236	103	82	7,928
2014	2,879	1,066	1,598	2,224	103	82	7,951
2015	2,901	1,060	1,589	2,207	103	82	7,941
2016	2,924	1,063	1,573	2,178	103	82	7,924
Annual Growth Rates (%)							
1980-1990	-1.7	-2.1	-6.7	9.5	-4.4	-3.3	-0.5
1990-2000	0.0	2.0	5.6	0.8	7.2	2.7	1.6
2000-2004	-0.2	4.0	-2.2	1.1	3.3	-1.6	0.3
2004-2008	0.8	0.4	0.3	-2.7	0.1	0.0	-0.5
2008-2016	0.7	0.4	-0.2	-0.8	0.0	0.0	0.1
2004-2016	0.7	0.4	0.0	-1.4	0.0	0.0	-0.1

Table 10-7 - SDG&E Planning Area
California Energy Demand 2006-2016 Staff Forecast
Natural Gas Consumption by Sector (10^6 Therms)

Year	Residential	Commercial	Industrial	Mining	Agricultural	Other	Total Consumption
1980	312	90	40	1	9	14	466
1981	288	86	39	1	8	14	436
1982	318	89	46	2	4	18	477
1983	296	88	27	2	5	13	432
1984	283	90	51	3	5	19	451
1985	327	89	36	3	4	15	474
1986	295	78	35	4	3	13	428
1987	331	78	43	5	4	14	473
1988	337	92	44	6	4	17	500
1989	342	92	52	7	4	18	515
1990	338	160	172	8	6	33	717
1991	335	136	82	6	5	23	588
1992	314	143	94	6	4	26	586
1993	327	174	104	5	8	30	648
1994	344	108	60	4	6	16	538
1995	316	118	62	4	6	16	521
1996	317	114	63	6	8	20	527
1997	316	173	29	1	3	7	528
1998	356	127	68	2	7	18	578
1999	382	136	68	2	8	20	616
2000	340	87	125	2	3	9	566
2001	345	150	38	2	6	19	559
2002	341	153	40	3	7	16	559
2003	322	152	34	6	6	14	533
2004	346	136	35	5	6	16	545
2006	353	135	37	6	6	16	553
2007	356	138	38	6	6	16	560
2008	360	139	39	6	6	16	566
2009	364	140	39	6	6	16	572
2010	367	142	40	7	6	16	578
2011	371	142	41	7	6	16	583
2012	375	142	41	7	6	16	588
2013	379	144	42	8	6	16	594
2014	383	146	43	8	6	16	602
2015	387	146	43	8	6	16	606
2016	392	147	43	8	6	16	611
Annual Growth Rates (%)							
1980-1990	0.8	5.8	15.7	22.9	-3.4	9.3	4.4
1990-2000	0.1	-5.8	-3.2	-13.5	-7.7	-12.6	-2.3
2000-2004	0.5	11.7	-27.1	30.6	19.2	17.4	-0.9
2004-2008	1.0	0.6	2.3	3.1	0.1	0.0	0.9
2008-2016	1.1	0.7	1.4	3.0	0.0	0.0	1.0
2004-2016	1.0	0.6	1.7	3.1	0.0	0.0	1.0

Table 10-8 - Other Planning Area
California Energy Demand 2006-2016 Staff Forecast
Natural Gas Consumption by Sector (10^6 Therms)

Year	Residential	Commercial	Industrial	Mining	Agricultural	Other	Total Consumption
1980	46	21	2	0	1	6	77
1981	43	18	1	0	1	2	65
1982	40	15	1	0	1	2	59
1983	33	16	1	0	1	2	52
1984	47	20	1	0	1	2	71
1985	59	22	1	1	1	2	84
1986	50	21	0	0	0	2	75
1987	62	16	0	0	0	1	81
1988	63	20	0	0	0	1	86
1989	69	19	1	1	1	1	91
1990	72	19	1	1	1	1	95
1991	61	24	1	1	1	1	88
1992	67	16	8	1	0	2	94
1993	72	17	10	1	0	3	102
1994	75	19	9	3	0	3	109
1995	71	14	11	4	0	2	103
1996	70	20	16	4	0	3	113
1997	76	21	17	4	0	3	121
1998	91	23	14	3	0	3	134
1999	86	22	17	4	0	3	132
2000	75	17	21	4	0	3	119
2001	78	20	15	2	0	2	117
2002	80	20	17	3	0	3	125
2003	84	23	16	4	0	3	130
2004	85	21	16	4	0	3	129
2006	86	21	16	4	0	3	129
2007	87	21	16	4	0	3	130
2008	87	21	16	4	0	3	131
2009	88	21	16	4	0	3	131
2010	88	20	16	4	0	3	132
2011	89	20	16	4	0	3	132
2012	90	20	16	4	0	3	133
2013	90	20	16	4	0	3	133
2014	91	20	16	4	0	3	134
2015	92	20	16	4	0	3	134
2016	92	20	16	4	0	3	134
Annual Growth Rates (%)							
1980-1990	4.6	-1.0	-9.1	6.6	-7.4	-15.1	2.1
1990-2000	0.4	-1.4	40.5	19.6	-11.5	9.1	2.3
2000-2004	3.1	5.8	-5.9	0.7	-3.0	-0.6	1.9
2004-2008	0.7	-0.4	0.2	-0.9	0.0	0.0	0.4
2008-2016	0.7	-0.5	-0.6	0.3	0.0	0.0	0.3
2004-2016	0.7	-0.4	-0.3	-0.1	0.0	0.0	0.4

Table 10-9 - Statewide
California Energy Demand 2006-2016 Staff Forecast
Natural Gas Consumption by Sector (10^6 Therms)

	Residential	Commercial	Industrial	Mining	Agricultural	Other	Total Consumption
1980	5,840	1,698	4,520	1,181	154	227	13,620
1981	5,195	1,652	4,365	1,084	152	234	12,681
1982	5,589	1,800	3,703	1,020	133	253	12,498
1983	5,169	1,608	2,752	850	105	209	10,693
1984	4,911	1,567	2,670	911	108	210	10,377
1985	5,493	1,654	3,003	1,147	109	213	11,619
1986	4,809	1,510	2,564	1,166	93	197	10,339
1987	5,167	1,542	2,843	1,211	98	194	11,055
1988	5,157	1,592	3,232	1,812	104	247	12,143
1989	5,385	1,489	2,958	2,150	105	191	12,278
1990	5,215	1,667	3,137	2,542	117	215	12,893
1991	5,270	1,461	2,770	2,619	100	255	12,475
1992	5,038	1,209	2,341	2,620	80	166	11,454
1993	5,145	1,446	2,745	2,254	82	186	11,859
1994	5,296	1,499	2,899	2,088	102	178	12,063
1995	4,812	1,418	2,939	2,579	93	161	12,002
1996	4,852	1,450	3,415	2,700	111	235	12,762
1997	4,811	1,626	3,192	3,479	131	164	13,403
1998	5,541	1,767	3,717	3,224	146	175	14,571
1999	5,760	1,894	3,680	2,877	166	179	14,556
2000	5,287	1,769	3,779	2,769	172	154	13,931
2001	5,129	1,778	3,503	2,856	143	162	13,571
2002	4,610	2,123	3,645	2,473	180	152	13,183
2003	5,057	1,990	3,049	2,886	192	142	13,317
2003	5,057	1,990	3,049	2,886	192	142	13,317
2005	5,159	2,001	3,133	2,806	195	149	13,443
2006	5,196	2,035	3,167	2,671	196	149	13,414
2007	5,237	2,044	3,220	2,602	196	149	13,449
2008	5,281	2,051	3,280	2,559	197	149	13,517
2009	5,326	2,064	3,327	2,537	197	149	13,600
2010	5,373	2,074	3,380	2,519	197	149	13,692
2011	5,419	2,080	3,429	2,503	197	149	13,777
2012	5,466	2,087	3,482	2,485	197	149	13,866
2013	5,514	2,082	3,529	2,464	197	149	13,935
2014	5,563	2,078	3,566	2,445	197	149	13,998
2015	5,614	2,087	3,588	2,423	197	149	14,059
2016	5,667	2,090	3,601	2,388	197	149	14,091
Annual Growth Rates (%)							
1980-1990	-1.1	-0.2	-3.6	8.0	-2.7	-0.5	-0.5
1990-2000	0.1	0.6	1.9	0.9	3.9	-3.3	0.8
2000-2004	-1.1	3.0	-5.2	1.0	2.9	-2.1	-1.1
2004-2008	1.1	0.8	1.8	-3.0	0.5	1.3	0.4
2008-2016	0.9	0.2	1.2	-0.9	0.0	0.0	0.5
2004-2016	1.0	0.4	1.4	-1.6	0.2	0.4	0.5

Form 2.3b - PG&E Planning Area
Natural Gas Price Forecast (2004 $/Therm)

	Core			Noncore	
Year	Residential	Commercial	Industrial	Commercial	Industrial
1990	0.57	0.60	0.53	0.37	0.34
1991	0.65	0.68	0.62	0.33	0.32
1992	0.60	0.63	0.56	0.45	0.34
1993	0.65	0.69	0.63	0.94	0.34
1994	0.66	0.68	0.63	0.31	0.28
1995	0.70	0.69	0.61	0.25	0.22
1996	0.67	0.62	0.53	0.41	0.27
1997	0.72	0.65	0.55	0.41	0.33
1998	0.71	0.59	0.50	0.39	0.30
1999	0.65	0.54	0.44	0.40	0.30
2000	0.78	0.70	0.60	0.67	0.56
2001	0.73	0.81	0.67	1.13	0.86
2002	0.67	0.65	0.47	0.54	0.34
2003	0.88	0.77	0.66	0.93	0.55
2004	0.97	0.85	0.74	0.88	0.60
2005	1.05	0.91	0.86	0.83	0.69
2006	1.13	0.98	0.98	0.77	0.77
2007	0.99	0.84	0.84	0.63	0.63
2008	1.04	0.89	0.89	0.68	0.68
2009	1.07	0.92	0.92	0.71	0.71
2010	1.05	0.90	0.90	0.69	0.69
2011	1.12	0.98	0.98	0.77	0.77
2012	1.22	1.07	1.07	0.86	0.86
2013	1.19	1.04	1.04	0.83	0.83
2014	1.09	0.94	0.94	0.73	0.73
2015	1.22	1.07	1.07	0.86	0.86
2016	1.25	1.11	1.11	0.90	0.90

Annual Growth Rates (%)

1990-2000	3.3	1.6		6.0	5.2
2000-2003	3.8	3.1	3.0	11.9	-0.4
2003-2008	3.5	3.0	6.3	-6.0	4.4
2008-2016	2.3	2.7	2.7	3.5	3.5
2003-2016	2.8	2.8	4.0	-0.3	3.8

Form 2.3b - SDG&E Planning Area
Natural Gas Price Forecast (2004 $/Therm)
Base Case

	Core			Noncore	
	Residential	Commercial	Industrial	Commercial	Industrial
1990	0.76	0.78	0.75	0.51	0.52
1991	0.73	0.72	0.66	0.45	0.46
1992	0.73	0.75	0.69	0.45	0.45
1993	0.76	0.82	0.71	0.29	0.28
1994	0.76	0.76	0.63	0.41	0.44
1995	0.74	0.73	0.61	0.31	0.32
1996	0.76	0.74	0.66	0.36	0.32
1997	0.80	0.76	0.68	0.41	0.38
1998	0.84	0.78	0.69	0.45	0.43
1999	0.87	0.80	0.70	0.50	0.49
2000	0.89	0.84	0.75	0.61	0.66
2001	1.37	1.23	1.15	1.11	1.04
2002	0.72	0.58	0.52	0.37	0.36
2003	0.89	0.74	0.68	0.59	0.59
2004	0.93	0.78	0.74	0.65	0.64
2005	1.08	0.91	0.89	0.72	0.71
2006	1.23	1.04	1.04	0.79	0.79
2007	1.09	0.90	0.90	0.65	0.65
2008	1.14	0.95	0.95	0.70	0.70
2009	1.16	0.97	0.97	0.72	0.72
2010	1.14	0.95	0.95	0.70	0.70
2011	1.22	1.03	1.03	0.78	0.78
2012	1.32	1.12	1.12	0.88	0.88
2013	1.29	1.09	1.09	0.85	0.85
2014	1.19	1.00	1.00	0.75	0.75
2015	1.32	1.13	1.13	0.88	0.88
2016	1.35	1.16	1.16	0.91	0.91

Annual Growth Rates (%)

1990-2000	1.7	0.7		1.6	2.4
2000-2003	-0.2	-3.9	-3.1	-0.8	-3.7
2003-2008	5.1	5.0	6.9	3.4	3.6
2008-2016	2.2	2.6	2.6	3.4	3.4
2003-2016	3.3	3.5	4.2	3.4	3.4

Form 2.3b - SCG Planning Area
Natural Gas Price Forecast (2004 $/Therm)

	Core			Noncore	
Year	Residential	Commercial	Industrial	Commercial	Industrial
1990	0.57	0.60	0.53	0.37	0.34
1991	0.65	0.68	0.62	0.33	0.32
1992	0.60	0.63	0.56	0.45	0.34
1993	0.65	0.69	0.63	0.94	0.34
1994	0.66	0.68	0.63	0.31	0.28
1995	0.70	0.69	0.61	0.25	0.22
1996	0.67	0.62	0.53	0.41	0.27
1997	0.72	0.65	0.55	0.41	0.33
1998	0.71	0.59	0.50	0.39	0.30
1999	0.65	0.54	0.44	0.40	0.30
2000	0.78	0.70	0.60	0.67	0.56
2001	0.73	0.81	0.67	1.13	0.86
2002	0.67	0.65	0.47	0.54	0.34
2003	0.88	0.77	0.66	0.93	0.55
2004	0.97	0.85	0.74	0.88	0.60
2005	1.05	0.91	0.86	0.83	0.69
2006	1.13	0.98	0.98	0.77	0.77
2007	0.99	0.84	0.84	0.63	0.63
2008	1.04	0.89	0.89	0.68	0.68
2009	1.07	0.92	0.92	0.71	0.71
2010	1.05	0.90	0.90	0.69	0.69
2011	1.12	0.98	0.98	0.77	0.77
2012	1.22	1.07	1.07	0.86	0.86
2013	1.19	1.04	1.04	0.83	0.83
2014	1.09	0.94	0.94	0.73	0.73
2015	1.22	1.07	1.07	0.86	0.86
2016	1.25	1.11	1.11	0.90	0.90

Annual Growth Rates (%)

1990-2000	3.3	1.6		6.0	5.2
2000-2003	3.8	3.1	3.0	11.9	-0.4
2003-2008	3.5	3.0	6.3	-6.0	4.4
2008-2016	2.3	2.7	2.7	3.5	3.5
2003-2016	2.8	2.8	4.0	-0.3	3.8